

It is illegal to post this copyrighted PDF on any website.

CME Background

Articles are selected for credit designation based on an assessment of the educational needs of CME participants, with the purpose of providing readers with a curriculum of CME articles on a variety of topics throughout each volume. Activities are planned using a process that links identified needs with desired results.

To obtain credit, read the article, correctly answer the questions in the Posttest, and complete the Evaluation. A \$10 processing fee will apply.

CME Objective

After studying this article, you should be able to:

- Recognize factors associated with prescription opioid misuse in older adults, including psychiatric, physical health, and substance use correlates

Accreditation Statement

The CME Institute of Physicians Postgraduate Press, Inc., is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education for physicians.



Credit Designation

The CME Institute of Physicians Postgraduate Press, Inc., designates this journal-based CME activity for a maximum of 1 *AMA PRA Category 1 Credit™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Note: The American Academy of Physician Assistants (AAPA) accepts certificates of participation for educational activities certified for *AMA PRA Category 1 Credit™* from organizations accredited by ACCME or a recognized state medical society. Physician assistants may receive a maximum of 1 hour of Category I credit for completing this program.

Release, Expiration, and Review Dates

This educational activity was published in November 2019 and is eligible for *AMA PRA Category 1 Credit™* through December 2021. The latest review of this material was October 2019.

Financial Disclosure

All individuals in a position to influence the content of this activity were asked to complete a statement regarding all relevant personal financial relationships between themselves or their spouse/partner and any commercial interest. The CME Institute has resolved any conflicts of interest that were identified. In the past year, Marlene P. Freeman, MD, Editor in Chief, has received research funding from JayMac and Sage; has been a member of the advisory boards for Otsuka, Alkermes, and Sunovion; has been a member of the Independent Data Safety and Monitoring Committee for Janssen; and, as a Massachusetts General Hospital (MGH) employee, works with the MGH National Pregnancy Registry, which is sponsored by Teva, Alkermes, Otsuka, Actavis, and Sunovion, and works with the MGH Clinical Trials Network and Institute, which receives research funding from multiple pharmaceutical companies and the National Institute of Mental Health. No member of the CME Institute staff reported any relevant personal financial relationships. **Faculty financial disclosure appears at the end of the article.**

Prescription Opioid Misuse in US Older Adults: Associated Comorbidities and Reduced Quality of Life in the National Epidemiologic Survey of Alcohol and Related Conditions-III

Ty S. Schepis, PhD,^{a,*} and Sean Esteban McCabe, PhD^{b,c,d}

ABSTRACT

Objective: Prescription opioid misuse (POM) prevalence in US older adults (50 years and older) has increased, and preliminary evidence associates POM with poor outcomes. Despite this, little is known about the health-related quality of life, mental and physical health, and substance use profiles of older adults with current and/or past POM. The aim of this study was to evaluate differences in these variables by POM history in US older adults.

Methods: Data were from the 2012–2013 National Epidemiologic Survey of Alcohol and Related Conditions-III, using adults 50 years and older (n = 14,667). Respondents were grouped into mutually exclusive categories: no lifetime POM, prior-to-past-year POM, past-year POM, and persistent POM (ie, prior-to-past-year and past-year POM). Groups were compared using design-based linear regression on health-related quality of life and logistic regression on mental health, physical health, and substance use variables, controlling for sociodemographics.

Results: Older adults with persistent POM had the greatest impairment, including lower mental and physical health–related quality of life and high rates of past-year major depression (17.6%), emergency department use (42.7%), and any substance use disorder (37.4%). Older adults with past-year POM had high rates of physical health diagnoses and health care utilization (eg, 45.6% past-year overnight hospitalization), while those with prior-to-past-year POM had significant current psychopathology (eg, 13.7% with past-year major depression).

Conclusions: Older adults with persistent POM likely need multidisciplinary care for their significant physical and mental health and substance use conditions. Given the elevated psychopathology in those with persistent POM, psychiatrists are well placed to identify those with long-term POM.

J Clin Psychiatry 2019;80(6):19m12853

To cite: Schepis TS, McCabe SE. Prescription opioid misuse in US older adults: associated comorbidities and reduced quality of life in the National Epidemiologic Survey of Alcohol and Related Conditions-III. *J Clin Psychiatry*. 2019;80(6):19m12853.

To share: <https://doi.org/10.4088/JCP.19m12853>

© Copyright 2019 Physicians Postgraduate Press, Inc.

^aDepartment of Psychology, Texas State University, San Marcos, Texas

^bCenter for the Study of Drugs, Alcohol, Smoking and Health, School of Nursing, University of Michigan, Ann Arbor, Michigan

^cInstitute for Research on Women and Gender, University of Michigan, Ann Arbor, Michigan

^dInstitute for Healthcare Policy and Innovation, University of Michigan, Ann Arbor, Michigan

*Corresponding author: Ty S. Schepis, PhD, Department of Psychology, Texas State University, 601 University Dr, San Marcos, TX 78666 (schepis@txstate.edu).

Clinical Points

- Little is known about how prescription opioid misuse (POM) history relates to mental and physical health in older adults (50 years and older).
- Older adults with persistent POM have higher rates of psychopathology and poorer physical health and health-related quality of life.
- Those with past-year POM initiation have poorer physical health, while those with prior-to-past-year misuse have elevated psychopathology.

Prescription opioid misuse (POM) in the United States is a public health crisis,^{1,2} with increasing rates of overdose and related fatalities.^{3,4} While the opioid epidemic has shifted somewhat from prescription medication to illicit opioids as drivers of overdose,^{3,5} POM was linked to 17,087 US overdose deaths in 2016.³ Even when POM does not result in overdose, it is not benign. Across the population, POM is linked with the incidence and recurrence of mood and anxiety disorders,^{6,7} poorer self-reported health and health-related quality of life,^{8,9} greater emergency department (ED) utilization,¹⁰ and higher rates of other substance use and substance use disorders (SUDs).¹¹⁻¹⁴

While POM has received increasing research attention, POM in older adults (50 years and older) remains understudied.¹⁵⁻¹⁸ Older adults have lower POM rates than younger groups,¹⁹ although older adult POM rates increased significantly from 2002/2003 to 2012/2013.²⁰ Furthermore, naloxone administration during emergency medical services calls increased by over 100% from 2012 to 2016, and opioid-related substance use treatment rates rose from 2000 to 2012 in US adults 55 years and older.^{21,22} In small convenience samples of older adults, the correlates of POM are similar to those in younger groups: higher levels of problematic substance use and depressive symptoms.^{18,23} In addition, older adults engaged in POM are more likely to misuse their own prescription medication than younger age groups,^{24,25} with high rates of opioid SUD symptoms in those engaged in POM.²⁵

Nonetheless, little is known about how POM history in older adults relates to health-related quality of life or psychopathology. Potential relationships between health care utilization (eg, past-year overnight hospitalization) or specific physical health conditions (eg, arthritis) and POM in older adults are also understudied. Finally, greater clarity is needed in patterns of concurrent substance use and SUD among older adults with varying POM histories. Understanding the health-related quality of life, psychopathology, physical health, and substance use profiles of older adults could highlight specific treatment needs in older adults with different POM histories; conversely, specific physical and mental health variables may mark increased POM likelihood, signaling an opportunity for screening and intervention.

Aims and Hypotheses

Our primary aim was to evaluate the relationship of a mutually exclusive 4-level lifetime/past-year POM history grouping variable to 4 health domains in older adults: 1, health-related quality of life; 2, mood, anxiety and trauma-related disorders; 3, health care utilization and physical health conditions; and 4, substance use and SUD history. Data were from the National Epidemiologic Survey of Alcohol and Related Conditions-III (NESARC-III), allowing for the first such study using nationally representative data in older adults. We hypothesized that older adults with persistent POM (ie, both past-year and prior-to-past-year) would have the lowest health-related quality of life and highest prevalence rates of psychopathology, health care utilization, physical health conditions, and substance use/SUD. Those with no history of misuse would have the best profiles, while those with only past-year or only prior-to-past-year POM would be intermediate.

METHODS

The NESARC-III is a nationally representative survey of noninstitutionalized, nonmilitary US adults, with sampling in both households and group quarters (eg, assisted living). Data collection occurred from April 2012 through May 2013. The NESARC-III used a multistage probability sampling design, with random participant selection, with oversampling of nonwhite individuals. The screening response rate was 72.0%, and the interview response rate was 84.0%. The overall response rate of 60.1% is comparable to other large, nationally representative surveys.²⁶ Data were weighted to be nationally representative of the US civilian population as of 2012, with adjustments made for oversampling and nonresponse. Both the National Institutes of Health and Westat institutional review boards (IRBs) approved the NESARC-III protocol, and the Texas State University IRB exempted this study from oversight. More information on the NESARC-III is available elsewhere.^{27,28}

Participants

The NESARC-III included 36,309 US adults. The current sample was restricted to adults 50 years and older ($n = 14,667$). The weighted older adult sample was 53.3% female and was 75.5% white, non-Hispanic; 10.0% black, non-Hispanic; and 9.0% Hispanic/Latino; 40.4% were 65 years or older. Participants in the weighted older adult sample were most likely to be married (60.9%; 12.6% widowed and 15.0% divorced), with similar proportions of high school and college graduates (23.5% and 29.5%, respectively).

Measures

Prescription opioid misuse group. POM was assessed in a NESARC-III module on use/misuse of non-alcohol and non-tobacco substances. This module was introduced via the following, read aloud by the field interviewer (emphasis and pauses from the NESARC-III): "Now I'd like to ask you

It is illegal to post this copyrighted PDF on any website.

Table 1. SF-12^a Mean Values in US Older Adults by Opioid Misuse Group

	No Misuse (A; n = 13,386) Mean t Score (95% CI ^b)	Prior to Past-Year Misuse Only (B; n = 752) Mean t Score (95% CI ^b)	Past-Year Misuse Only (C; n = 70) Mean t Score (95% CI ^b)	Both Past-Year and Prior Misuse (D; n = 459) Mean t Score (95% CI ^b)	Post Hoc Significant Differences ^c
Physical disability scale	46.1 (45.7–46.4)	45.5 (44.3–46.7)	41.2 (37.5–44.9)	38.7 (37.7–40.1)	A > B, C, D; B > D
Physical functioning	47.4 (47.0–47.7)	47.4 (46.3–48.6)	43.2 (39.8–46.7)	40.2 (38.7–41.7)	A, B > D
Role physical	47.0 (46.7–47.3)	44.9 (44.0–45.9)	40.9 (37.9–43.9)	40.1 (38.8–41.3)	A > B, C, D; B > D
Bodily pain	47.4 (47.0–47.7)	45.8 (44.5–47.1)	38.6 (34.4–42.7)	36.8 (35.2–38.4)	A > B > C, D
General health	46.6 (46.2–47.0)	44.5 (43.3–45.7)	41.6 (37.6–45.5)	39.5 (38.0–41.0)	A > B > D
Mental disability scale	51.8 (51.5–52.0)	48.3 (47.4–49.2)	44.7 (41.6–47.7)	44.5 (42.9–46.0)	A > B, C, D; B > D
Vitality	51.1 (50.8–51.3)	49.1 (48.1–50.1)	47.1 (43.8–50.5)	45.4 (44.1–46.7)	A > B > D
Social functioning	50.1 (49.8–50.4)	47.5 (46.4–48.7)	43.4 (39.9–47.0)	41.9 (40.3–43.5)	A > B, C, D; B > D
Role emotional	47.8 (47.4–48.1)	45.0 (43.9–46.0)	40.9 (36.9–44.9)	39.1 (37.5–40.6)	A > B, C, D; B > D
Mental health	52.4 (52.2–52.6)	49.2 (48.2–50.2)	44.1 (40.9–47.3)	45.0 (43.2–46.8)	A > B, C, D; B > D

^aSF-12 scores are normed to a mean of 50 and standard deviation of 10, and the SF-12 is reliable and valid in older adults. Lower scores indicate lower levels of health, while higher scores indicate higher levels of health.

^b95% confidence interval of the t score.

^cPost hoc differences were evaluated via linear regression models adjusted for age, sex, race/ethnicity, US region, educational attainment, marital status, and sexual orientation, and they were Bonferroni-corrected for 6 pairwise comparisons (.05/6 = .0083).

Abbreviation: SF-12 = 12-Item Short-Form Health Survey version 2.

about your experiences with medicines and other kinds of drugs that you may have used ON YOUR OWN—that is, either WITHOUT a doctor’s prescription (PAUSE); in GREATER amounts, MORE OFTEN, or LONGER than prescribed (PAUSE); or for a reason other than a doctor said you should use them. People use these medicines and drugs ON THEIR OWN to feel more alert, to relax or quiet their nerves, to feel better, to enjoy themselves, to get high or just to see how they work.”

Opioid medications were described as “painkillers, for example . . . methadone, codeine, Demerol, Vicodin, Oxy-Contin, opioid, oxy, Percoset, Dilaudid, Percodan, morphine.”

For those with lifetime POM, misuse recency was assessed: “Did you use painkillers in the last 12 months only, before the last 12 months only, or during both time periods?” Participants were classified as having no lifetime misuse, prior-to-past-year misuse only, past-year misuse only, or persistent misuse (ie, both prior-to-past-year and past-year misuse).

Health domains. These were in 4 categories: health-related quality of life, psychopathology, health care utilization/physical health, and substance use/SUD. Health-related quality of life was based on the 12-Item Short-Form Health Survey version 2 (SF-12v2), a 12-item assessment containing 2, higher-order, component scores (physical and mental) and 8 scale scores. The component scores are composed of 4 scales, with the physical component composed of the physical functioning, role-physical, bodily pain, and general health scales; the mental component is composed of the vitality, social functioning, role-emotional, and mental health scales. SF-12 scores are normed to a mean of 50 and standard deviation of 10, and it is reliable and valid in older adults.^{29–32}

Psychopathology was measured using the Alcohol Use Disorder and Associated Disabilities Interview Schedule-5 (AUDADIS-5), a fully structured self-report measure of

DSM-5 diagnoses. Psychopathology included the following (lifetime and past-year): major depression, bipolar I disorder, generalized anxiety disorder, social anxiety disorder, panic disorder, and posttraumatic stress disorder (PTSD). Lifetime suicide attempts (yes/no) were also included. The AUDADIS-5 has fair to good reliability.^{28,33}

Health care utilization variables were any past-year: ED visits, overnight hospitalizations, and injuries requiring medical attention or at least a half-day activity reduction (all yes/no). Seven past-year physical health conditions were assessed: chest pain/angina, arthritis, insomnia, cancer, complex regional pain syndrome, diabetes, and peripheral nerve problems. These were 2-item assessments, with the first question asking whether the participant had the condition in the past year and the second assessing whether “a doctor or other health professional [told] you that you had [health condition].” Confirmation by a health professional was required. The physical health conditions were chosen because they are associated with either significant pain (eg, diabetic neuropathy) or a common POM motive (ie, “to sleep”/insomnia).¹⁴

Finally, the substance use/SUD variables were lifetime and past-year sedative/tranquilizer misuse, marijuana use, any SUD, alcohol use disorder, tobacco use disorder, and prescription opioid use disorder. Past-year binge alcohol use was included and defined as 4 or 5 alcoholic drinks within a 2-hour period for women and men, respectively.³⁴ The substance use/SUD variables were assessed via the AUDADIS-5, with strong reliability.²⁸

Data Analyses

All analyses used Stata 15.1 (College Station, Texas: StataCorp; 2017). Analyses incorporated the complex survey features of the NESARC-III and used data weights and the *svy* commands. Initially, weighted cross-tabulations were performed to estimate the mean (SF-12/health-related quality of life) or prevalence (psychopathology, physical

You are prohibited from making this PDF publicly available.

Table 2. Psychopathology Prevalence Rates in US Older Adults by Opioid Misuse Group

	No Misuse (A; n = 13,386) % (95% CI ^a)	Prior to Past-Year Misuse Only (B; n = 752) % (95% CI ^a)	Past-Year Misuse Only (C; n = 70) % (95% CI ^a)	Both Past-Year and Prior Misuse (D; n = 459) % (95% CI ^a)	Post Hoc Significant Differences ^b
Lifetime					
Major depression	18.4 (17.5–19.4)	28.9 (24.2–34.0)	14.8 (7.5–27.2)	29.5 (24.6–35.0)	B, D > A
Bipolar I disorder	1.3 (1.0–1.6)	2.5 (1.5–4.0)	1.2 (0.2–8.1)	5.3 (3.1–8.9)	D > A
PTSD	4.5 (4.1–5.0)	9.0 (6.9–11.7)	6.3 (2.7–14.1)	12.7 (9.2–17.1)	B, D > A
Generalized anxiety	7.8 (7.4–8.4)	11.1 (9.0–13.5)	7.5 (3.4–15.9)	16.5 (13.1–20.5)	D > A
Social anxiety	3.2 (2.8–3.6)	6.8 (4.7–9.7)	7.3 (3.2–16.0)	8.2 (5.4–12.2)	B, D > A
Panic disorder	4.0 (3.6–4.5)	9.8 (7.3–13.0)	4.4 (1.3–14.0)	10.9 (7.4–15.9)	B, D > A
Suicide attempt	3.5 (3.1–4.0)	9.1 (6.7–12.2)	3.9 (1.2–12.0)	12.0 (8.9–16.0)	B, D > A
Past-year					
Major depression	7.9 (7.3–8.4)	13.7 (10.6–17.5)	8.4 (3.8–17.4)	17.6 (14.2–21.6)	B, D > A
Bipolar I disorder	0.8 (0.6–1.1)	2.0 (1.2–3.5)	1.2 (0.2–8.1)	4.9 (2.8–8.4)	D > A
PTSD	3.1 (2.8–3.5)	5.7 (4.2–7.7)	4.3 (1.5–11.5)	10.3 (7.3–14.5)	B, D > A
Generalized anxiety	5.0 (4.6–5.4)	7.5 (5.8–9.6)	6.2 (2.4–15.2)	12.8 (9.9–16.3)	D > A, B
Social anxiety	2.3 (2.0–2.7)	5.0 (3.5–7.1)	5.4 (2.0–14.1)	6.4 (3.9–10.1)	B, D > A
Panic disorder	1.9 (1.7–2.2)	4.3 (2.5–7.3)	1.0 (0.1–6.5)	7.3 (4.7–11.2)	B, D > A

^a95% CI = 95% confidence interval of the prevalence estimate.

^bPost hoc differences were evaluated via linear regression models adjusted for age, sex, race/ethnicity, US region, educational attainment, marital status, and sexual orientation, and they were Bonferroni-corrected for 6 pairwise comparisons (.05/6 = .0083).

Abbreviation: PTSD = posttraumatic stress disorder.

health/health care utilization, and substance use) and 95% confidence intervals (95% CIs) of all health domains by POM group.

Following this, linear regression models were fit to evaluate POM group differences in health-related quality of life, and logistic models were fit to estimate between-POM group significant differences in psychopathology, physical health/health care utilization, and substance use prevalence. The linear and logistic models adjusted for age, sex, race/ethnicity, region of the United States, educational attainment, marital status, and sexual orientation. Because these models involved multiple pairwise comparisons, a Bonferroni-adjusted maximum *P* value for significance (ie, .05/6 pairwise comparisons = .0083) was set to reduce the likelihood of Type I (or false positive) error. Sexual orientation was included as a covariate because of evidence that it is significantly associated with POM in older adults.³⁵

RESULTS

Health-Related Quality of Life by Prescription Opioid Misuse Group

Those with persistent POM had the lowest SF-12 component and subscale scores (range, 36.8–45.4; Table 1), except for the Mental Health subscale, on which older adults with past-year only misuse were lowest. There were no significant differences between the past-year only (range, 38.6–44.7) and the persistent POM groups or the past-year only and prior-to-past-year only (range, 44.5–49.2) groups. In contrast, the persistent POM group had significantly lower SF-12 scores on all scales than the prior-to-past-year group.

Older adults with no POM history had the highest health-related quality-of-life scores (range, 46.1–52.4), except for the Physical Functioning subscale, on which the no POM and prior-to-past-year POM groups were identical (47.4).

After adjusting for the covariates, the no POM group had significantly higher SF-12 scores than the persistent POM group on all measured scales, higher scores than the prior-to-past-year group on all but Physical Functioning, and higher scores than the past-year only group on both component scores and 5 subscales.

Notably, the persistent POM group had 4 total SF-12 scales/subscales a standard deviation below the mean (Physical Component, 38.7; Bodily Pain, 36.8; General Health, 39.5; and Role-Emotional, 39.1). Given the role of pain in POM, it is important to note that impairment from Bodily Pain decreased from those with persistent POM (36.8) or past-year POM (38.6) to those with prior-to-past-year POM (45.8; higher scores denote a lesser level of pain-related impairment); those with no POM history had significantly less impairment due to bodily pain (ie, higher Bodily Pain scores; 47.4) than other groups.

Psychopathology by Prescription Opioid Misuse Group

Per Table 2, those with persistent POM had the highest lifetime and past-year psychopathology rates, while those with no POM history had the lowest. To illustrate, over 1 in 6 with persistent POM had past-year major depression (17.6%), compared to fewer than 1 in 12 with no POM history (7.9%). Those with persistent POM had significantly higher rates of psychopathology than those with no POM history for all 6 diagnoses (lifetime or past-year) and lifetime suicide attempts. Prevalence of both lifetime and past-year major depression, PTSD, social anxiety, panic disorder, and lifetime suicide attempts were significantly higher in those with prior-to-past-year POM than those with no history. Finally, those with past-year (only) POM had psychopathology prevalence rates that were most like those with no POM history, with no significant differences from other groups.

It is illegal to post this copyrighted PDF on any website.

Table 3. Past-Year Physical Health and Health Care Utilization Prevalence Rates in US Older Adults by Opioid Misuse Group

	No Misuse (A; n = 13,386) % (95% CI ^a)	Prior to Past-Year Misuse Only (B; n = 752) % (95% CI ^a)	Past-Year Misuse Only (C; n = 70) % (95% CI ^a)	Both Past-Year and Prior Misuse (D; n = 459) % (95% CI ^a)	Post Hoc Significant Differences ^b
Overnight hospitalizations	16.5 (15.8–17.3)	13.6 (10.7–17.0)	45.6 (32.8–59.0)	31.4 (25.7–37.6)	C, D > A, B
Emergency department visit	23.1 (22.2–24.1)	24.8 (21.4–28.5)	47.7 (33.0–62.8)	42.7 (37.4–48.2)	C, D > A, B
Significant injury ^c	18.9 (17.9–19.9)	19.5 (16.2–23.2)	27.3 (17.0–40.8)	34.1 (28.4–40.2)	D > A, B
Chest pain/angina	5.7 (5.3–6.2)	5.6 (3.9–8.2)	18.4 (9.6–32.6)	11.4 (8.3–15.6)	C, D > A, B
Diabetes	16.9 (16.0–17.8)	13.5 (10.8–16.7)	13.7 (7.8–23.0)	19.2 (15.5–23.6)	No differences
Arthritis	35.0 (34.2–36.0)	31.5 (27.5–35.8)	39.6 (25.7–55.4)	51.6 (46.2–56.9)	D > A, B
Insomnia	9.9 (9.2–10.8)	10.8 (8.7–13.4)	10.5 (4.8–21.5)	19.9 (16.0–24.6)	D > A, B
Cancer	7.8 (7.5–8.4)	8.4 (6.1–11.6)	8.5 (3.3–20.0)	13.1 (9.7–17.5)	D > A
Complex regional pain	1.3 (1.0–1.8)	1.2 (0.6–2.5)	1.8 (0.2–12.0)	3.9 (2.2–6.9)	D > A
Peripheral nerve problems	14.3 (13.4–15.3)	16.1 (12.8–20.2)	28.1 (19.5–38.8)	29.3 (24.8–34.2)	C, D > A; D > B

^a95% CI = 95% confidence interval of the prevalence estimate.

^bPost hoc differences were evaluated via logistic models adjusted for age, sex, race/ethnicity, US region, educational attainment, marital status, and sexual orientation, and they were Bonferroni-corrected for 6 pairwise comparisons (.05/6 = .0083).

^cSignificant injury denotes an injury requiring medical care or reduced activities by half a day or more.

Table 4. Substance Use Disorder Prevalence Rates in US Older Adults by Opioid Misuse Group

	No Misuse (A; n = 13,386) % (95% CI ^a)	Prior to Past-Year Misuse Only (B; n = 752) % (95% CI ^a)	Past-Year Misuse Only (C; n = 70) % (95% CI ^a)	Both Past-Year and Prior Misuse (D; n = 459) % (95% CI ^a)	Post Hoc Significant Differences ^b
Lifetime					
Sedative/tranquilizer misuse	2.3 (2.0–2.7)	54.1 (49.3–58.9)	21.2 (12.4–33.9)	52.3 (47.1–57.4)	B, D > C > A
Marijuana use	22.0 (20.8–23.2)	70.1 (65.1–74.7)	37.3 (25.1–51.4)	52.1 (45.5–58.7)	B > A, C, D; D > A
Any substance use disorder ^c	20.5 (19.5–21.5)	55.6 (50.3–60.8)	44.3 (32.2–57.2)	56.3 (49.0–63.2)	B, C, D > A
Alcohol use disorder	19.3 (18.3–20.3)	48.0 (42.6–53.3)	38.5 (26.4–52.1)	41.0 (34.7–47.7)	B, C, D > A
Tobacco use disorder	24.6 (23.4–25.8)	49.5 (43.9–55.1)	41.2 (29.5–54.0)	48.4 (42.8–54.1)	B, D > A
Opioid use disorder	NA	9.5 (6.8–13.1)	8.6 (4.1–17.2)	29.0 (24.0–34.6)	D > B, C
Past year					
Sedative/tranquilizer misuse	0.5 (0.4–0.7)	5.8 (4.3–7.8)	15.4 (8.1–27.3)	30.5 (25.9–35.6)	B, C, D > A; D > B
Marijuana use	2.8 (2.5–3.2)	13.2 (9.5–18.1)	10.4 (4.6–21.8)	19.1 (14.9–24.1)	B, D > A
Binge alcohol use	5.2 (4.8–5.7)	11.3 (8.4–15.0)	6.5 (2.6–15.4)	12.8 (9.7–16.7)	B, D > A
Any substance use disorder ^c	5.9 (5.5–6.4)	15.5 (12.4–19.1)	29.7 (18.7–43.8)	37.4 (31.0–44.2)	C, D > B > A
Alcohol use disorder	5.6 (5.1–6.1)	12.7 (9.9–16.1)	19.1 (10.0–33.4)	15.9 (12.1–20.5)	B, C, D > A
Tobacco use disorder	14.1 (13.3–14.9)	31.1 (26.5–36.1)	32.5 (21.1–46.5)	32.7 (28.1–37.7)	B, D > A
Opioid use disorder	NA	NA	8.6 (4.1–17.2)	24.3 (19.6–29.7)	D > C

^a95% CI = 95% confidence interval of the prevalence estimate.

^bPost hoc differences were evaluated via linear regression models adjusted for age, sex, race/ethnicity, US region, educational attainment, marital status, and sexual orientation, and they were Bonferroni-corrected for 6 pairwise comparisons (.05/6 = .0083).

^cAny substance use disorder includes disorders from alcohol, marijuana, heroin, cocaine, methamphetamine, prescription tranquilizer/sedative, prescription opioid, prescription stimulant, inhalant, hallucinogen, and/or club drug use. Abbreviation: NA = not applicable.

Health Care Utilization and Physical Health by Prescription Opioid Misuse Group

The most impaired physical health and health care utilization profiles were not solely in those with persistent POM (Table 3); instead, prevalence of past-year ED utilization (47.7%), overnight hospitalizations, (45.6%) and chest pain/angina (18.4%) were highest in those with past-year only POM. Those with persistent POM had significantly higher rates of health care utilization or physical health diagnoses than those with no POM history, and those with persistent POM had higher rates than those with prior-to-past-year POM of all health care utilization and all physical health conditions, except for past-year cancer or complex regional pain. Those with past-year only POM had higher rates of past-year overnight hospitalizations, ED visits, and

chest pain/angina than those without a POM history or with prior-to-past-year only POM. No differences were found in diabetes prevalence by POM history.

Substance Use by Prescription Opioid Misuse Group

Per Table 4, those with persistent or prior-to-past-year POM had the highest rates of lifetime substance use or SUD, with significantly higher rates than those with no misuse. Over half of those in the persistent (56.3%) or prior-to-past-year POM (55.6%) groups had a lifetime SUD, while only 1 in 5 (20.5%) of those with no POM history did. For past-year substance use and SUD, highest rates were consistently in those with persistent POM, followed by those with past-year only POM. Nearly 2 in 5 older adults with persistent POM (37.4%) and nearly 3 in 10 with past-year only POM

You are prohibited from making this PDF publicly available.

(29.7%) had a past-year SUD; this contrasts with the 5.9% rate in those with no POM history. Tobacco use disorder rates were high across those with any history of POM, with lifetime rates in excess of 40% and past-year rates above 30% across groups. Finally, those with persistent POM had the highest rates of both lifetime (29.0%) and past-year (24.3%) prescription opioid SUD.

DISCUSSION

As hypothesized, older adults with persistent POM had impaired health-related quality of life and higher rates of lifetime and past-year psychopathology and substance use/SUD or past-year health care utilization and physical health conditions. Those with no POM history had the healthiest profiles, including above population mean mental health-related quality of life. Finally, those with prior-to-past-year or past-year POM had intermediate profiles, with unique patterns: psychopathology and lifetime substance use were more common in those with prior-to-past-year POM, while older adults with past-year only POM were more likely to have significant health conditions or health care utilization.

Older adults with persistent POM are a high-risk subgroup likely to require interdisciplinary care to address the common psychopathology, physical health diagnoses, problematic substance use, and impaired quality of life, especially in terms of pain. The SF-12 Bodily Pain subscale suggests that pain significantly interferes with normal functioning in older adults with persistent POM, and multidisciplinary pain management with non-opioid therapies for ongoing pain may be needed. These older adults may also require psychiatric interventions, complex medication management, and other specialist referrals (eg, addiction medicine). Monitoring for suicidality is needed,³⁶ given their elevated rates of lifetime suicide attempts and recent findings that past-year opioid and/or benzodiazepine medication misuse is associated with suicidal ideation in older adults.^{35,37}

While not currently engaged in POM, those with prior-to-past-year POM still had elevated rates of past-year psychopathology and substance use, relative to those with no misuse history. Over 1 in 10 engaged in past-year marijuana use or binge alcohol use or had an SUD or past-year major depression. While their physical health and health care utilization indicators were very similar to those with no POM history, older adults with prior-to-past-year POM would benefit from screening and may need referrals for psychiatric and/or specialty substance use treatment.

Finally, those with past-year (only) POM had impaired health-related quality of life and higher rates of health care utilization and physical health conditions. While the cross-sectional data preclude causal inference, older adults who recently initiated POM could be self-treating significant physical health problems causing pain, given their notably low SF-12 Bodily Pain scores. Pain relief is the most important motive for most adults engaged in POM,¹⁴ and pain relief may drive POM initiation in older adults; effective pain management may be key to limiting POM in these older

adults. Also, screening for SUD is needed in those with any past-year POM, and specialty substance use treatment may be warranted, given that nearly 3 in 10 of the past-year only group had an SUD, often alcohol-related (past-year alcohol use disorder was 19.1%). Finally, elevated rates of sedative/tranquilizer misuse suggest a need to monitor suicidal ideation,³⁵ as with those with persistent POM.

Clinicians can assess POM risk and current POM using standardized tools,^{38,39} including the Screener and Opioid Assessment for Patients with Pain (SOAPP-R) for POM risk⁴⁰ and Current Opioid Misuse Measure (COMM) for current POM.⁴¹ These measures should be combined with clinical judgment; this appears to increase screening effectiveness.⁴² Attention to factors associated with increased POM risk, including the psychiatric, physical health, and substance use correlates examined here, can aid screening efforts.^{39,43,44}

Limitations

First, the NESARC-III is cross-sectional, and no causal inferences can be made regarding these results. Longitudinal work is needed to clarify these relationships found here, as complex patterns of causal relations or latent third variables (eg, internalizing) may be at work. A second limitation was the secondary analytic nature of the work, with the available sample and variables dictated by the dataset. To illustrate, only 70 older adults were in the past-year POM group, and a lack of results for this group may be due to power-related issues. Future work that examines older adults who recently initiated POM is needed to clarify our results. Third, self-report bias was possible, though research indicates that self-report substance use data are reliable and valid.^{45,46} Fourth, self-selection bias and undersampling of older adults in controlled access facilities (eg, nursing homes) were both likely to have occurred, with evidence of somewhat poorer coverage of adults 65 years and older.²⁷ Finally, the κ values indicated only fair reliability for the assessed psychopathology, though the substance use assessment had strong reliability.²⁸

Summary

US older adults with persistent POM are a group with significant and diverse medical concerns, including low health-related quality of life, psychiatric illness, high rates of health care utilization, and problematic substance use. These adults may strain health care systems and need a multidisciplinary team to address the high likelihood of significant comorbid physical pain and multiple psychiatric and other medical conditions. Nonetheless, the high rates of psychopathology in those with persistent POM also provide an opportunity for screening for POM by psychiatrists and other health care professionals, possibly using the tools suggested above. Completion of a thorough medical history and attention to current physical health complaints can also help psychiatrists screen for more recent initiation (ie, past-year) of POM.

While older adults with past-year only or prior-to-past-year only POM had better profiles than those with persistent

It is illegal to post this copyrighted PDF on any website.

POM, attention to physical health conditions or current psychopathology, respectively, is needed. Across groups with a history of POM, physical pain and current substance use may be issues, with referrals to specialty pain management and/or substance use treatment required. Similarly, high rates of lifetime and past-year tobacco use disorder in those with any POM history also suggest a need for lung cancer

screening, per guidelines.⁴⁷ Future research is needed to clarify whether the concurrent medical conditions in those with a POM history predate or follow POM initiation. Such work could further identify the most effective treatment targets to reduce the prevalence of both POM and the impairing medical conditions found here in older adults with a POM history.

Submitted: March 29, 2019; accepted July 26, 2019.

Published online: November 19, 2019.

Disclosure of off-label usage: The authors have determined that, to the best of their knowledge, no investigational information about pharmaceutical agents or device therapies that is outside US Food and Drug Administration–approved labeling has been presented in this article.

Financial disclosure: Drs Schepis and McCabe have no personal affiliations or financial relationships with any commercial interest to disclose relative to the article.

Funding/support: The NESARC-III is funded by the National Institute on Alcohol Abuse and Alcoholism, and this work was supported by the National Institutes of Health (NIH) via R01AA025684, R01CA212517, R01DA031160, R01DA036541, R01DA042146, and R01DA043696.

Role of the sponsor: NIH had no role in this study's design, the collection, analysis or interpretation of data, the writing of the report, or the decision to submit the paper for publication.

Additional information: The original dataset for the National Epidemiologic Survey of Alcohol and Related Conditions-III (NESARC-III) is available from the National Institute on Alcohol Abuse and Alcoholism (NIAAA; <https://www.niaaa.nih.gov/research/nesar-iii>).

REFERENCES

- Kanouse AB, Compton P. The epidemic of prescription opioid abuse, the subsequent rising prevalence of heroin use, and the federal response. *J Pain Palliat Care Pharmacother*. 2015;29(2):102–114.
- Hall WD, Farrell M. Reducing the opioid overdose death toll in North America. *PLoS Med*. 2018;15(7):e1002626.
- Seth P, Scholl L, Rudd RA, et al. Overdose deaths involving opioids, cocaine, and psychostimulants—United States, 2015–2016. *MMWR Morb Mortal Wkly Rep*. 2018;67(12):349–358.
- Olfson M, Crystal S, Wall M, et al. Causes of death after nonfatal opioid overdose. *JAMA Psychiatry*. 2018;75(8):820–827.
- Jones CM, Einstein EB, Compton WM. Changes in synthetic opioid involvement in drug overdose deaths in the United States, 2010–2016. *JAMA*. 2018;319(17):1819–1821.
- Martins SS, Fenton MC, Keyes KM, et al. Mood and anxiety disorders and their association with non-medical prescription opioid use and prescription opioid-use disorder: longitudinal evidence from the National Epidemiologic Study on Alcohol and Related Conditions. *Psychol Med*. 2012;42(6):1261–1272.
- Schepis TS, Hakes JK. Non-medical prescription use increases the risk for the onset and recurrence of psychopathology: results from the National Epidemiological Survey on Alcohol and Related Conditions. *Addiction*. 2011;106(12):2146–2155.
- Cochran G, Hruschak V, Bacchi JL, et al. Behavioral, mental, and physical health characteristics and opioid medication misuse among community pharmacy patients: a latent class analysis. *Res Social Adm Pharm*. 2017;13(6):1055–1061.
- Griffin ML, Bennett HE, Fitzmaurice GM, et al. Health-related quality of life among prescription opioid-dependent patients: results from a multi-site study. *Am J Addict*. 2015;24(4):308–314.
- Frank JW, Binswanger IA, Calcaterra SL, et al. Non-medical use of prescription pain medications and increased emergency department utilization: results of a national survey. *Drug Alcohol Depend*. 2015;157:150–157.
- Nicholson HL, Ford JA. Correlates of prescription opioid misuse among Black adults: findings from the 2015 National Survey on Drug Use and Health. *Drug Alcohol Depend*. 2018;186:264–267.
- Saha TD, Kerridge BT, Goldstein RB, et al. Nonmedical prescription opioid use and DSM-5 nonmedical prescription opioid use disorder in the United States. *J Clin Psychiatry*. 2016;77(6):772–780.
- Leeman RF, Sun Q, Bogart D, et al. Comparisons of cocaine-only, opioid-only, and users of both substances in the National Epidemiologic Survey on Alcohol and Related Conditions (NESARC). *Subst Use Misuse*. 2016;51(5):553–564.
- 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.
- Kuerbis A, Sacco P, Blazer DG, et al. Substance abuse among older adults. *Clin Geriatr Med*. 2014;30(3):629–654.
- Maree RD, Marcum ZA, Saghaei E, et al. A systematic review of opioid and benzodiazepine misuse in older adults. *Am J Geriatr Psychiatry*. 2016;24(11):949–963.
- Wu LT, Blazer DG. Illicit and nonmedical drug use among older adults: a review. *J Aging Health*. 2011;23(3):481–504.
- Chang YP. Factors associated with prescription opioid misuse in adults aged 50 or older. *Nurs Outlook*. 2018;66(2):112–120.
- Center for Behavioral Health Statistics and Quality. *2016 National Survey on Drug Use and Health: Detailed Tables*. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2017.
- Schepis TS, McCabe SE. Trends in older adult nonmedical prescription drug use prevalence: results from the 2002–2003 and 2012–2013 National Survey on Drug Use and Health. *Addict Behav*. 2016;60:219–222.
- Cash RE, Kinsman J, Crowe RP, et al. Naloxone administration frequency during emergency medical service events—United States, 2012–2016. *MMWR Morb Mortal Wkly Rep*. 2018;67(31):850–853.
- Chhatre S, Cook R, Mallik E, et al. Trends in substance use admissions among older adults. *BMC Health Serv Res*. 2017;17(1):584.
- Levi-Minzi MA, Surratt HL, Kurtz SP, et al. Under treatment of pain: a prescription for opioid misuse among the elderly? *Pain Med*. 2013;14(11):1719–1729.
- Mowbray O, Quinn A. Prescription pain reliever misuse prevalence, correlates, and origin of possession throughout the life course. *Addict Behav*. 2015;50:22–27.
- Schepis TS, McCabe SE, Teter CJ. Sources of opioid medication for misuse in older adults: results from a nationally representative survey. *Pain*. 2018;159(8):1543–1549.
- Center for Behavioral Health Statistics and Quality. *2016 National Survey on Drug Use and Health: Methodological Resource Book (Section 8, Data Collection Final Report)*. Rockville, MD: Substance Abuse and Mental Health Services Administration; 2017.
- Grant BF, Chu A, Sigman R, et al. *Source and Accuracy Statement: National Epidemiologic Survey on Alcohol and Related Conditions-III (NESARC-III)*. Rockville, MD: National Institute on Alcohol Abuse and Alcoholism; 2014.
- Grant BF, Goldstein RB, Smith SM, et al. The Alcohol Use Disorder and Associated Disabilities Interview Schedule-5 (AUDADIS-5): reliability of substance use and psychiatric disorder modules in a general population sample. *Drug Alcohol Depend*. 2015;148:27–33.
- Ware J Jr, Kosinski M, Keller SDA. A 12-Item Short-Form Health Survey: construction of scales and preliminary tests of reliability and validity. *Med Care*. 1996;34(3):220–233.
- Cernin PA, Cresci K, Jankowski TB, et al. Reliability and validity testing of the short-form health survey in a sample of community-dwelling African American older adults. *J Nurs Meas*. 2010;18(1):49–59.
- Bentur N, King Y. The challenge of validating SF-12 for its use with community-dwelling elderly in Israel. *Qual Life Res*. 2010;19(1):91–95.
- Gobbens RJ. Associations of ADL and IADL disability with physical and mental dimensions of quality of life in people aged 75 years and older. *PeerJ*. 2018;6:e5425.
- Hasin DS, Shmulewitz D, Stohl M, et al. Procedural validity of the AUDADIS-5 depression, anxiety and post-traumatic stress disorder modules: substance abusers and others in the general population. *Drug Alcohol Depend*. 2015;152:246–256.
- National Institute of Alcohol Abuse and Alcoholism. *NIAAA Newsletter, Winter 2004*. Bethesda, MD: Office of Research Translation and Communications, NIAAA; 2004.
- Schepis TS, Simoni-Wastila L, McCabe SE. Prescription opioid and benzodiazepine misuse is associated with suicidal ideation in older adults. *Int J Geriatr Psychiatry*. 2019;34(1):122–129.
- Kampman K, Jarvis M. American Society of Addiction Medicine (ASAM) national practice guideline for the use of medications in the treatment of addiction involving opioid use. *J Addict Med*. 2015;9(5):358–367.
- Schepis TS, Teter CJ, Simoni-Wastila L, et al. Prescription tranquilizer/sedative misuse prevalence and correlates across age cohorts

You are prohibited from making this PDF publicly available.

It is illegal to post this copyrighted PDF on any website.

- in the US. *Addict Behav.* 2018;87:24–32.
38. Dowell D, Haegerich TM, Chou R. CDC guideline for prescribing opioids for chronic pain—United States, 2016. *JAMA.* 2016;315(15):1624–1645.
 39. Volkow ND, McLellan AT. Opioid abuse in chronic pain—misconceptions and mitigation strategies. *N Engl J Med.* 2016;374(13):1253–1263.
 40. Butler SF, Fernandez K, Benoit C, et al. Validation of the revised Screener and Opioid Assessment for Patients with Pain (SOAPP-R). *J Pain.* 2008;9(4):360–372.
 41. Butler SF, Budman SH, Fernandez KC, et al. Development and validation of the Current Opioid Misuse Measure. *Pain.* 2007;130(1–2):144–156.
 42. Varney SM, Perez CA, Araña AA, et al. Detecting aberrant opioid behavior in the emergency department: a prospective study using the Screener and Opioid Assessment for Patients with Pain-Revised (SOAPP-R), Current Opioid Misuse Measure (COMM), and provider gestalt. *Intern Emerg Med.* 2018;13(8):1239–1247.
 43. Kaye AD, Jones MR, Kaye AM, et al. Prescription opioid abuse in chronic pain: an updated review of opioid abuse predictors and strategies to curb opioid abuse: part 1. *Pain Physician.* 2017;20(2S):S93–S109.
 44. Kaye AD, Jones MR, Kaye AM, et al. Prescription opioid abuse in chronic pain: an updated review of opioid abuse predictors and strategies to curb opioid abuse (part 2). *Pain Physician.* 2017;20(2S):S111–S133.
 45. O'Malley PM, Bachman JG, Johnston LD. Reliability and consistency in self-reports of drug use. *Int J Addict.* 1983;18(6):805–824.
 46. Johnston LD, O'Malley PM. Issues of validity and population coverage in student surveys of drug use. *NIDA Res Monogr.* 1985;57:31–54.
 47. Moyer VA; US Preventive Services Task Force. Screening for lung cancer: US Preventive Services Task Force recommendation statement. *Ann Intern Med.* 2014;160(5):330–338.



POSTTEST

To obtain credit, go to PSYCHIATRIST.COM (Keyword: December CME) to take this Posttest and complete the Evaluation. A \$10 processing fee is required.

1. According to the study results, individuals aged 50 years or older with past-year prescription opioid misuse (POM) have the highest rates of which of the following, compared with individuals with no misuse, persistent POM (past-year and prior use), and prior-to-past-year-only POM?
 - a. Substance use disorders
 - b. Major depression
 - c. Health care utilization (eg, emergency visits, hospitalizations)
 - d. Posttraumatic stress disorder
2. Jamal, a 64-year-old male patient who is nearing retirement from a physically demanding trade, confides in you that he has started taking some of the prescription opioid medication that was prescribed to his wife after surgery she had 6 months ago. He denies ever smoking but acknowledges alcohol use. Which of the following statements about Jamal is *false*?
 - a. He is at risk for impaired health-related quality of life.
 - b. He could be self-treating pain and in need of effective pain management.
 - c. He is at risk for alcohol use disorder and should be screened.
 - d. He is unlikely to need screening for chest pain.

You are prohibited from making this PDF publicly available.