

The Association Between Chronic Pain & Suicide

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46,000 Americans died by suicide in 2020.

Suicide

- **Suicide**- death caused by intentionally by harming oneself
- Rates of suicide have increased by **30%** since the year 2000¹
- **Sociodemographic risk factors**²:
 - Medicaid enrollment
 - Poverty
 - Unemployment
 - Age
 - Rates highest among people aged **25-34** and **85+**

Chronic Pain as a Potential Risk Factor for Suicide

- **Chronic pain:** intermittent or continuous pain that lasts over 3 months and interferes with daily activities¹
- People with chronic pain are **2-3 times** more likely to report suicidal behaviors or complete suicide²
 - **Sociodemographic factor:** unemployed/disabled
 - **General Risk Factors:** depressive symptoms, anger issues, substance use
- **WHO recommendation:** routine screening for suicidal behaviors on all individuals of 10+ who reported having chronic pain³

*To examine pain diagnoses and
pain management strategies in
Philadelphia Medicaid-enrollees
who died by suicide.*

Study Design

Population

- Philadelphians who were at one point enrolled in Medicaid and who died by suicide

Study period

- 2015-2018

Data sources

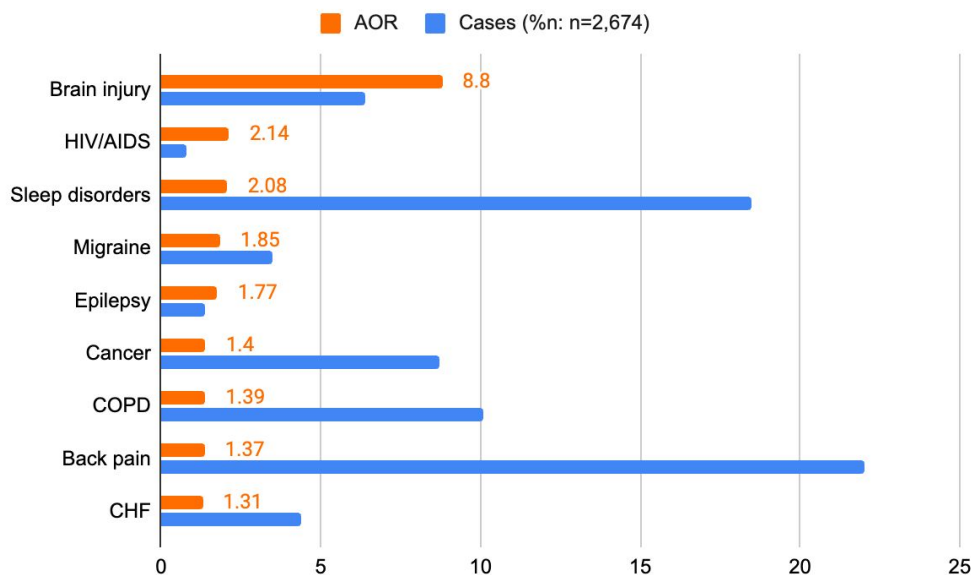
- Death records from Philadelphia's Medical Examiner's Office
- Medicaid eligibility files,
- Medicaid physical, behavioral, and pharmacy claims

Analyses

- Examining the common mental and physical diagnoses among study population
- Examining pain management strategies such as prescription fills & PT visits

Key Findings of Literature Review

9 Physical Health Conditions Associated with an Increased Risk for Suicide



- EHR & insurance claims data 2000-2013 adjusted for sex, age, and psychiatric diagnoses including substance use disorders
- **Most prevalent:** sleep disorders, back pain, COPD
- **Greatest increase risk:** sleep disorders, brain injury, HIV/AIDS
- Significant associations between these physical health conditions and suicide indicate that chronic pain is linked to suicidality partially distinctively from behavioral health conditions such as depression

Behavioral Health Conditions Associated with an Increased Risk for Suicide

Mood disorders

- 60% of people who commit suicide have had a mood disorder such as major depressive disorder or bipolar disorder¹

Anxiety

- Independent risk factor or comorbidity²

Substance Use Disorder

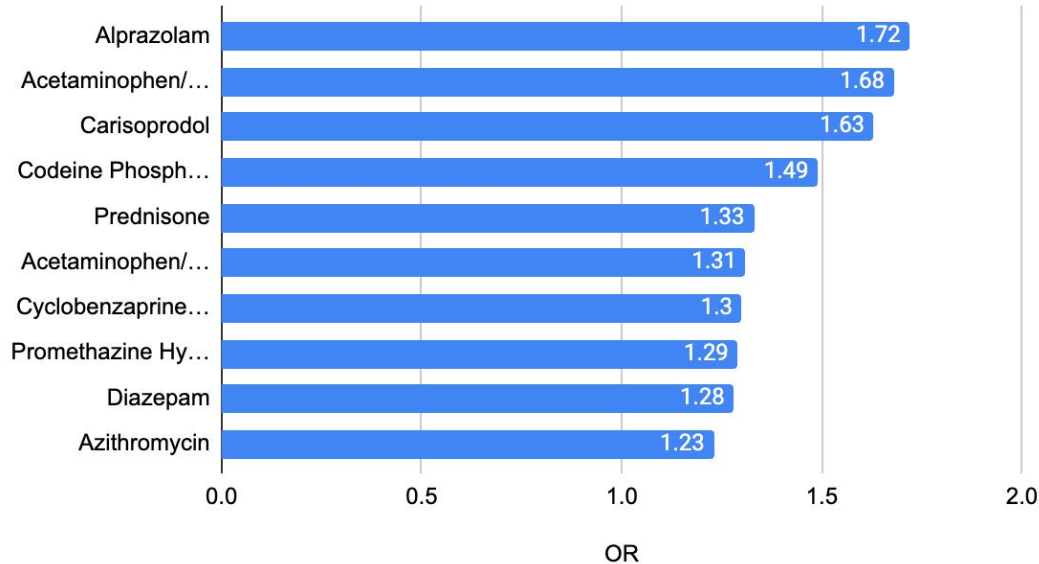
- Greatest association is with alcohol abuse³

1. <https://www.hhs.gov/answers/mental-health-and-substance-abuse/does-depression-increase-risk-of-suicide/index.html>

2. Sareen J, Cox BJ, Afifi TO, et al. Anxiety Disorders and Risk for Suicidal Ideation and Suicide Attempts: A Population-Based Longitudinal Study of Adults. Arch Gen Psychiatry. 2005;62(11):1249–1257. doi:10.1001/archpsyc.62.11.1249

3. Brádvik L. Suicide Risk and Mental Disorders. Int J Environ Res Public Health. 2018 Sep 17;15(9):2028. doi: 10.3390/ijerph15092028. PMID: 30227658; PMCID: PMC6165520.

10 Medications Associated with an Increased Risk for Suicidal Events



1. **Anxiolytics:** benzodiazepines, alprazolam and diazepam
2. **Opioid & analgesic/opioid narcotic mixtures:** acetaminophen/hydrocodone bitartrate & codeine phosphate/promethazine hydrochloride
3. **Barbiturate-stimulant mixture:** acetaminophen/butalbital/caffeine
4. **Muscle relaxants:** cyclobenzaprine & carisoprodol
5. **Steroid:** prednisone
6. **Post-operative anti-nausea medication:**

Opioid Usage

- Opioids are commonly used for pain relief
 - **142 million** prescriptions were given for opioids in 2020¹.
- Opioid epidemic
 - Opioid overdose is the **2nd** leading cause of suicide among people with chronic pain².
 - The rate of suicides using opioids has **doubled** since 1999³.

1. CDC. (2021). U.S. Opioid Dispensing Rate Maps. <https://www.cdc.gov/drugoverdose/rxrate-maps/index.html#--text=The%20overall%20national%20opioid%20dispensing%20rate%20declined%20from%202012%20to%20no%20more%20than%20142%20million%20opioid%20prescriptions>

2. Petrosky, E., Harpaz, R., Fowler, K. A., Bohm, M. K., Helmick, C. G., Yuan, K., & Betz, C. J. (2018). Chronic Pain Among Suicide Decedents, 2003 to 2014: Findings From the National Violent Death Reporting System. *Annals of Internal Medicine*, 169(7), 448–455. <https://doi.org/10.7326/M18-0830>

3. Braden, J. B., Edlund, M. J., & Sullivan, M. D. (2017). Suicide Deaths With Opioid Poisoning in the United States: 1999–2014. *American Journal of Public Health*, 107(3), 421–426. <https://doi.org/10.2105/AJPH.2016.303591>

Pill Mill Legislation

- Pill mill laws include prescription restrictions, inspection requirements, and clinical practice guidelines
- **Pros:**
 - reduced drug-related suicide rate by **8.5%**
 - Mainly impacted women
- **Cons:**
 - pill mill policies contributed to a **7.3%** significant increase in the overall suicide rate of the Black population
 - Disparities in access to medical care

Tapering

CDC Guidelines¹

- Avoid prescribing doses greater than 50 MME per day
- Taper patients on doses higher than 50 MME by 10% per month if they patient has been taking opioids for more than a year or 10% per week if the patient has been taking opioids for less than a year

Impact

- Many people tapering²
 - Annual percentage of patients undergoing tapering of their daily opioid dose by 15% or more went from 12.7% in 2008 to 23.1% in 2017
- Tapering too fast²
 - Among the 99,874 participants studied, 26.5% had a tapering rate exceeding 10% per week
- Greater long-term risk for overdose, withdrawal, and and mental health crises³
 - Incidence of overdoses or withdrawal were 1.57 times & rates of mental health crises were 1.52 times greater among participants post-tapering

Next Steps

1. Data Analysis

- a. STATA
 - i. Frequency of diagnoses
 - ii. Overview of pain management including opioid usage prior to death
- b. Short time period- low generalizability
 - i. Requesting permissions for more recent data through 2021- need to update data license agreement and IRB to increase study period from 4 years to 7 years
 - ii. May expand analysis to suicide deaths AND suicidal ideation
 1. To increase sample size
- c. Investigate substance-use disorder
 - i. Can't see opioid use disorder in physical claims, must piece together from physical diagnoses and mental health claims

2. Finish drafting paper

A Look to the Future

- Integrate pain management into suicide prevention
- Research may inform PENN Center for Mental Health

Key Lessons Learned

1. Developing a study design
2. Writing for a peer-reviewed publication

Thank you!

Questions?