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 2000\(^1\)
- **Sociodemographic risk factors**\(^2\):
  - Medicaid enrollment
  - Poverty
  - Unemployment
  - Age
    - Rates highest among people aged **25-34** and **85+**

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Chronic Pain as a Potential Risk Factor for Suicide

- **Chronic pain**: intermittent or continuous pain that lasts over 3 months and interferes with daily activities\(^1\)
- People with chronic pain are **2-3 times** more likely to report suicidal behaviors or complete suicide\(^2\)
  - **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 pain\(^3\)

\(^1\) https://my.clevelandclinic.org/health/diseases/4798-chronic-pain
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

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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 disorder

Anxiety

- Independent risk factor or comorbidity

Substance Use Disorder

- Greatest association is with alcohol abuse

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 & carisoprodal
5. **Steroid**: prednisone
6. **Post-operative anti-nausea medication**: Phenothiazine promethazine hydrochloride

https://doi.org/10.1162/99608f92.6fdaa9de
Opioid Usage

● Opioids are commonly used for pain relief
  ○ 142 million prescriptions were given for opioids in 2020\(^1\).

● Opioid epidemic
  ○ Opioid overdose is the 2nd leading cause of suicide among people with chronic pain\(^2\).
  ○ The rate of suicides using opioids has doubled since 1999\(^3\).

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 Guidelines

- Avoid prescribing doses greater than 50 MME per day
- Taper patients on doses higher than 50 MME by 10% per month if they have 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 tapering
  - 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 fast
  - Among the 99,874 participants studied, 26.5% had a tapering rate exceeding 10% per week
- Greater long-term risk for overdose, withdrawal, and mental health crises
  - 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?