The Dual Public Health Crises of Chronic Pain and Substance Use Disorder During the COVID-19 Pandemic: An Intersection Illuminating Critical Public Health Issues

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No Disclosures
No Conflicts of Interest
Objectives

- To understand the dual epidemics of chronic pain and substance use disorder (SUD) in the U.S.
- To study the interplay between the COVID-19 pandemic and the dual epidemics of chronic pain and SUD
- To learn about the association of loneliness and SUD throughout the U.S. and around the world
- To provide tools for frontline health care workers and first responders so they may better help patients with chronic pain and SUD during the COVID-19 pandemic, and beyond
The Facts

- At least 50 Million People in the US suffer from Chronic Pain
- In 2018, 164.8 Million people (> aged 12) were substance users in at least one month:
  - 139.8 Million drank alcohol, 58.8 Million used a tobacco product, 31.9 Million used an illicit substance
- 2 Million People in US have an Opioid Use Disorder
- 10 Million People in the US misuse opioid analgesics
- In 2018, there were 48,344 recorded suicides, up from 42,826 in 2014
- 13.8 percent (approx. 42 million) of US population suffers from loneliness

IOM, Relieving Pain in America, 2011
National Pain Strategy

CDC, NCHS. Data Brief 362. Increase in Suicide Mortality in the US, 1999-2018
Pain is a Major Public Health Issue

- Chronic pain affects an estimated 50-100 million American adults.
- Chronic pain costs up to $635 billion per year in medical treatment and lost productivity.
- Compared to people without chronic pain:
  - People with chronic pain have roughly 3 times the rates of depression and anxiety disorders.
  - People with chronic pain have at least two times the risk of completing suicide.

Institute of Medicine Report, 2011
National pain strategy, 2016
From 1999 through 2017, the age-adjusted suicide rate increased 33% from 10.5 per 100,000 standard population to 14.0.

The rate increased on average by about 1% per year from 1999 through 2006 and by 2% per year from 2006 through 2017. For males, the rate increased 26% from 17.8 in 1999 to 22.4 in 2017.
Prescription Opioid Misuse is a Major Public Health Issue

2015 National Survey on Drug Use and Health (NSDUH):

22 million Americans ≥ 12 years old has misused a prescription pain reliever since 2002

2018 NSDUH report:

9.9 million Americans ≥ 12 years old misused a prescription pain reliever in the past year

Despite a percentage decrease from 2015-2017, the total number of Americans misusing prescription pain relievers in 2018 is nearly half the number of Americans misusing between 2002-2015


Rate of Opioid Misuse in the United States

For Americans 12 years and Greater:

- 4.2% US Average
- 4.9% Hispanic Population
- 6.9% American Indian Population

Figure 23. Source Where Pain Relievers Were Obtained for Most Recent Misuse among People Aged 12 or Older Who Misused Pain Relievers in the Past Year: 2018

- Prescriptions from More Than One Doctor (2.0%)
- Stole from Doctor’s Office, Clinic, Hospital, or Pharmacy (0.9%)
- Prescription from One Doctor (34.7%)
- Given by, Bought from, or Took from a Friend or Relative (51.3%)
- From Friend or Relative for Free (38.6%)
- Bought from Friend or Relative (9.5%)
- Took from Friend or Relative without Asking (3.2%)
- Got through Prescription(s) or Stole from a Health Care Provider (37.6%)
- Some Other Way (4.6%)
- Bought from Drug Dealer or Other Stranger (6.5%)

9.9 Million People Aged 12 or Older Who Misused Pain Relievers in the Past Year

Note: Respondents with unknown data for the Source for Most Recent Misuse or who reported Some Other Way but did not specify a valid way were excluded.

Collision of the COVID-19 and Addiction Epidemics
Nora Volkow, MD

People with SUD especially vulnerable to COVID-19

Chronic comorbid COPD, cardiovascular diseases and other respiratory diseases-increase the case fatality rate of COVID-19 to 6.3% (from 2.3%)

Risks of Addiction Epidemics may be **indirect and complex:**

1. Incarceration, and the risks of this congregant setting
2. Reduced Access to Healthcare and Recovery Support Services
3. A high percentage of people experiencing homelessness have SUD, and vice versa
4. Difficulty Obtaining Medications
5. Emergency Departments and First Responders are prioritizing COVID-19 patients..


Estimation of Excess Deaths Associated With the COVID-19 Pandemic in the United States, March to May 2020

Daniel M. Weinberger, PhD; Jenny Chen, BS; Ted Cohen, MD, DPH; et al


Figure 1. Excess Deaths in the United States From March 1 Through May 30, 2020

The observed number of deaths is indicated by the solid line, and the expected number of deaths, adjusting for seasonality, influenza epidemics, and reporting delays, is indicated by the dashed line. The area between these 2 lines represents the total number of excess deaths: blue-gray (bottom), deaths recorded as due to COVID-19; orange (narrow middle section), additional pneumonia and influenza excess deaths not coded as due to COVID-19; and beige (top), deaths that were not attributed to COVID-19, pneumonia, or influenza.

https://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2767980
Health

‘Cries for help’: Drug overdoses are soaring during the coronavirus pandemic

Suspected overdoses nationally jumped 18 percent in March, 29 percent in April and 42 percent in May, data from ambulance teams, hospitals and police shows.

By William Wan and Heather Long

July 1, 2020 at 7:00 a.m. MDT

Issue brief: Reports of increases in opioid-related overdose and other concerns during COVID pandemic

*Updated July 20, 2020

The AMA urges governors and state legislatures to take action

- Governors must adopt the new SAMHSA and DEA rules and guidance in-full for the duration of the national emergency—this includes flexibility for evaluation and prescribing requirements using telemedicine;
- States must enact as part of their own Emergency Orders and other actions a complete removal of prior authorization, step therapy and other administrative barriers for medications used to treat opioid use disorder;
- States must remove existing barriers for patients with pain to obtain necessary medications. This includes removing arbitrary dose, quantity and refill restrictions on controlled substances; and
- States must enact, implement and support harm reduction strategies, including removing barriers to sterile needle and syringe services programs.

“Are We Rationing Who We Care About?”

Certain Vulnerable Groups risk being left behind in our response to the COVID-19 outbreak.

Ian Hamilton, University of York
# Fibromyalgia/musculoskeletal pain and adverse childhood events

<table>
<thead>
<tr>
<th>Variable</th>
<th>Total sample (n=120)</th>
<th>Individuals with ACE (n=84)</th>
<th>Individuals without ACE (n=36)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Partnership status: n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Married or partnered</td>
<td>60 (50)</td>
<td>41 (49)</td>
<td>19 (53)</td>
<td>0.49*</td>
</tr>
<tr>
<td>Separated or divorced</td>
<td>22 (18)</td>
<td>17 (20)</td>
<td>5 (14)</td>
<td></td>
</tr>
<tr>
<td>Widowed</td>
<td>8 (7)</td>
<td>7 (8)</td>
<td>1 (3)</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>30 (25)</td>
<td>19 (23)</td>
<td>11 (30)</td>
<td></td>
</tr>
<tr>
<td>*In household: Mean (SD)</td>
<td>2.4 (1.5)</td>
<td>2.4 (1.5)</td>
<td>2.4 (1.6)</td>
<td>0.80***</td>
</tr>
<tr>
<td>Self-reported pain complaint (visit 1): n (%)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fibromyalgia/musculoskeletal pain</td>
<td>96 (80)</td>
<td>66 (79)</td>
<td>30 (83)</td>
<td>0.04**</td>
</tr>
<tr>
<td>Headache</td>
<td>8 (7)</td>
<td>4 (5)</td>
<td>4 (11)</td>
<td></td>
</tr>
<tr>
<td>Muscle spasm</td>
<td>7 (6)</td>
<td>7 (8)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Mixed</td>
<td>6 (5)</td>
<td>6 (7)</td>
<td>0 (0)</td>
<td></td>
</tr>
<tr>
<td>Unknown</td>
<td>3 (2)</td>
<td>1 (1)</td>
<td>2 (6)</td>
<td></td>
</tr>
<tr>
<td>Years of pain symptoms: Mean (SD)</td>
<td>8.0 (1.5)</td>
<td>8.0 (1.5)</td>
<td>8.0 (1.3)</td>
<td>1.00***</td>
</tr>
<tr>
<td>Years treated for pain: Mean (SD)</td>
<td>4.5 (1.0)</td>
<td>4.5 (1.1)</td>
<td>4.6 (0.9)</td>
<td>0.56***</td>
</tr>
</tbody>
</table>

*Chi-square test, **Fisher’s exact test, ***Independent two-sample t-test, ACE: Adverse childhood experiences, SD: Standard deviation

Fibromyalgia/musculoskeletal pain and adverse childhood events

Table 3: Test-retest reliability results for the ACE questionnaire

<table>
<thead>
<tr>
<th>Types of ACE</th>
<th>Visit 1</th>
<th>Visit 2</th>
<th>Kappa (95% CI)</th>
<th>P value*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parental violence</td>
<td>47 (39.2)</td>
<td>50 (41.7)</td>
<td>0.81 (0.70-0.92)</td>
<td>0.37</td>
</tr>
<tr>
<td>Physical harm</td>
<td>48 (40.0)</td>
<td>48 (40.0)</td>
<td>0.72 (0.60-0.85)</td>
<td>1.00</td>
</tr>
<tr>
<td>Unwanted sexual experience</td>
<td>43 (35.8)</td>
<td>40 (33.3)</td>
<td>0.91 (0.83-0.99)</td>
<td>0.18</td>
</tr>
<tr>
<td>Emotional/psychological mistreatment</td>
<td>48 (40.0)</td>
<td>48 (40.0)</td>
<td>0.76 (0.64-0.88)</td>
<td>1.00</td>
</tr>
<tr>
<td>Emotional neglect</td>
<td>29 (24.2)</td>
<td>28 (23.3)</td>
<td>0.75 (0.61-0.89)</td>
<td>0.76</td>
</tr>
<tr>
<td>Physical neglect</td>
<td>10 (8.3)</td>
<td>8 (6.7)</td>
<td>0.76 (0.53-0.99)</td>
<td>0.32</td>
</tr>
<tr>
<td>Any ACE (overall n=84, 70%)</td>
<td>80 (66.7)</td>
<td>76 (63.3)</td>
<td>0.78 (0.66-0.90)</td>
<td>0.25</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mean (SD)</th>
<th>Mean (SD)</th>
<th>Mean difference (SD)</th>
<th>P value**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total ACE score</td>
<td>1.9 (1.8)</td>
<td>1.9 (1.9)</td>
<td>0.03 (0.7)</td>
</tr>
</tbody>
</table>

*McNemar’s test for paired frequencies, **Wilcoxon signed-rank test for the paired mean difference between visits 1 and 2, ACE: Adverse childhood experiences, SD: Standard deviation, CI: Confidence interval
Chronic Pain and Suicidality- Hallmark Study

- 5,700 adults- US population-based study in US to investigate pain and suicide
- 29 percent of the subjects had chronic pain, back or neck pain, frequent or severe headaches, or other non-arthritis pain
- All of these conditions “were consistently related to suicidality” with chronic severe headaches having the strongest association
- People with chronic headaches were 4.3 times more likely than those without such headaches to think about suicide, 4.6 times more likely to plan suicide, and 6.5 times more likely to have attempted suicide in the previous 12 months
- Those with “other” chronic pain also were 89 times more likely than those without such pain to have thought about (2.5 times as likely), planned (3.5 times), and attempted (6.2 times) suicide

Many people experiencing homelessness and/or poverty also have chronic pain and SUD

Many are African American and/or other minorities

They may live in jurisdictions that are very high in particulate matter, a cause of carbon emissions

Combined with periods of unavoidable extreme heat in the summer months, excessive moisture and vector-borne illness in the winter

Association of Take-Home Naloxone and Opioid Overdose reversals Performed by Patients in an Opioid Treatment Program

Joanna G Katzman, Mikiko Y Takeda, Nina Greenberg, et al. JAMA Open Network 2019

Study Participants Enrolled and Completed OEND (n = 395)

- Study Participants that Completed one or more Follow Up Visits (n = 336)
- Death (n = 3) (Non-substance use related deaths)
- Study Participants Lost to Follow Up (n = 56)

Study Participants who performed OD reversals on community members (n = 73)

- 74 Study Participants Reported
  - A total of 114 OD * reversals in community
  - 1 OD Reversal (n = 49)
  - 2 OD Reversals (n = 13)
  - 3 OD Reversals (n = 7)
  - 4 OD Reversals (n = 3)
  - 6 OD Reversals (n = 1)

Study Participants who reported no OD reversals (n = 263)

- Take Home Naloxone Replacement needed (n = 62)
- No Take Home Naloxone replacement needed (n = 201)

73 Study Participants with OD reversals had 130 Total Naloxone Replacements:
  - Overdose (114)
  - Lost (13)
  - Stolen (2)
  - Expired (1)

62 Study Participants with No OD reversals has 75 Total Naloxone Replacements:
  - Lost (68)
  - Stolen (4)
  - Expired (1)
  - Destroyed (2)

*All were reported heroin overdoses (OD)
OEND – overdose education and naloxone distribution
OD – overdose
EMS – emergency medical services
Version 12/12/2019
Association of Take-Home Naloxone and Opioid Overdose Reversals Performed by Patients in an Opioid Treatment Program

Table 1: Demographics (n=395)

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>270</td>
<td>68.4</td>
</tr>
<tr>
<td>Male</td>
<td>125</td>
<td>31.6</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18-19</td>
<td>13</td>
<td>3.3</td>
</tr>
<tr>
<td>20-29</td>
<td>154</td>
<td>39.0</td>
</tr>
<tr>
<td>30-39</td>
<td>110</td>
<td>27.8</td>
</tr>
<tr>
<td>40-49</td>
<td>49</td>
<td>12.4</td>
</tr>
<tr>
<td>50-59</td>
<td>48</td>
<td>12.2</td>
</tr>
<tr>
<td>&gt;=60</td>
<td>21</td>
<td>5.3</td>
</tr>
<tr>
<td><strong>Race</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hispanic/White</td>
<td>260</td>
<td>65.8</td>
</tr>
<tr>
<td>Non-Hispanic/White</td>
<td>100</td>
<td>25.3</td>
</tr>
<tr>
<td>American Indian/Alaska Native</td>
<td>16</td>
<td>4.1</td>
</tr>
<tr>
<td>Black or African American</td>
<td>9</td>
<td>2.3</td>
</tr>
<tr>
<td>Asian</td>
<td>1</td>
<td>0.3</td>
</tr>
<tr>
<td>Not Reported</td>
<td>9</td>
<td>2.3</td>
</tr>
<tr>
<td><strong>Medication Assisted Treatment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Methadone</td>
<td>279</td>
<td>70.6</td>
</tr>
<tr>
<td>Buprenorphine</td>
<td>109</td>
<td>27.6</td>
</tr>
<tr>
<td>Naltrexone (oral or intramuscular)</td>
<td>7</td>
<td>1.8</td>
</tr>
<tr>
<td><strong>Companion for Naloxone Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Present</td>
<td>33</td>
<td>8.4</td>
</tr>
<tr>
<td>Not Present</td>
<td>354</td>
<td>89.6</td>
</tr>
<tr>
<td>Unknown</td>
<td>8</td>
<td>2.0</td>
</tr>
</tbody>
</table>

Table 2. Community members reversed by naloxone administered by study participants (n=114).

<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Friend</td>
<td>63</td>
<td>55.3</td>
</tr>
<tr>
<td>Relative</td>
<td>20</td>
<td>17.5</td>
</tr>
<tr>
<td>Stranger</td>
<td>15</td>
<td>13.2</td>
</tr>
<tr>
<td>Acquaintance</td>
<td>11</td>
<td>9.6</td>
</tr>
<tr>
<td>Significant Other</td>
<td>5</td>
<td>4.4</td>
</tr>
</tbody>
</table>

**Friend** = One who is attached to another by affection  
**Relative** = A person connected to another by blood or affinity  
**Stranger** = A person whom another person does not know or has not met  
**Acquaintance** = Someone who is known but is not a close friend  
**Significant Other** = A person who is important to ones well-being especially: a spouse or in a similar relationship

Source: Merriam Webster
Loneliness commonly defined as a state of being alone, and/or a state of mind.

Researchers commonly define loneliness as feeling lonely more than once per week.

https://www.verywellmind.com/loneliness-causes-effects-and-treatments-2795749#definition-of-loneliness
Psychological Distress and Loneliness Reported by US Adults in 2018 and April 2020

- 1468 Adults
- Johns Hopkins COVID-19 Civic Life and Public Health Survey from April 7 to April 13, 2020, using NORC’s AmeriSpeak Panel. AmeriSpeak is a probability-based panel designed to be representative of the US adult population
- 70% Response Rate
- Highest Psychological Stress: 18-29 year olds, Low Income, and Hispanic
- 13.8% of US population feels lonely often or all of the time

https://jamanetwork.com/journals/jama/fullarticle/2766941
Loneliness and Substance Use Disorder

- A global public health epidemic
- Painful emotional state, related to perceived and desired relationships
- Up to 40% of older adults and 1/3 of people in most industrialized countries experience loneliness
- Illicit drug use— one of the most stigmatized health conditions in the globe, hence many people who use drugs become socially isolated
- While not everyone who is socially isolated becomes lonely, there is certainly a high risk...

Ingram, et a., Drug and Alcohol Review, July 2020
Loneliness and Substance Use Disorder

- Systematic Review of 41 studies
- People with SUD are lonelier than general population
- Females and younger people with SUD may be more lonely
- Loneliness significantly related to poor physical and mental health
- Higher severity of Loneliness correlated with increased loneliness
- UCLA loneliness measure most commonly used

Ingram, et al., Drug and Alcohol Review, July 2020
UCLA Loneliness Scale

INSTRUCTIONS: Indicate how often each of the statements below is descriptive of you. C indicates “I often feel this way” S indicates “I sometimes feel this way” R indicates “I rarely feel this way” N indicates “I never feel this way”

1. I am unhappy doing so many things alone O S R N
2. I have nobody to talk to O S R N
3. I cannot tolerate being so alone O S R N
4. I lack companionship O S R N
5. I feel as if nobody really understands me O S R N
6. I find myself waiting for people to call or write O S R N
7. There is no one I can turn to O S R N
8. I am no longer close to anyone O S R N
9. My interests and ideas are not shared by those around me O S R N
10. I feel left out O S R N

UCLA Loneliness Scale

11. I feel completely alone O S R N
12. I am unable to reach out and communicate with those around me O S R N
13. My social relationships are superficial O S R N
14. I feel starved for company O S R N
15. No one really knows me well O S R N
16. I feel isolated from others O S R N
17. I am unhappy being so withdrawn O S R N
18. It is difficult for me to make friends O S R N
19. I feel shut out and excluded by others O S R N
20. People are around me but not with me O S R N

Loneliness in Treatment-Seeking Substance-Dependent Populations: Validation of the Social/Emotional Loneliness Scale for Adults

- Cross-Sectional survey (N=316)
- Participants attended residential treatment programs
- Meth (45.8%), Alcohol (36.3%)
- Greater than 75% had prior mental health diagnoses
- 80% reported loneliness on the SELSA scale at least once per month
- SELSA- has 3 sub-categories: family, intimate and social loneliness
- 69% agreed with the statement that “loneliness has been a serious problem for me at times”
- SELSA results correlated with the UCLA loneliness scale

Ingram I, Kelly P, Deane F, et al. Journal of Dual Diagnosis, 2018
Loneliness and Suicidal Ideation in Drug Using College Students

- 207 drug using undergraduates in a southeastern university
- Suicidality positively correlate with loneliness ($r=0.40$) and increased drug use ($r=0.20$)
- And drug use mediated the association between suicidality and loneliness

Lamis, et al, Suicide and Life Threatening Behavior, 2014
Attachment in relation to affect regulation and interpersonal functioning among substance use disorder in patients

- Given that people who misuse drugs report using alcohol and drugs to regulate negative moods, perhaps ‘earned attachment security’ through therapeutic efforts and an increased confidence in mood regulation abilities may lead to decreased levels of negative affect that could potentially decrease the use of substances as a mood regulator.

- Attachment Theory- related to affect regulation

- However, little research on affect regulation and interpersonal function with those with SUD, despite their high incidence of loneliness.

COVID-19: Innovations To Reduce OUD/SUD and Chronic Pain

- Methadone dispensing outside of MMTF
- Increase take-home naloxone; it works
- Tele-behavioral therapy; ECHO
- Increase frequency of checking in on SUD and chronic pain patients (either by phone or increase in-person visits, even if brief)
- Social work assessment as more people unemployed, homeless, hungry, etc.
- Increase frequency of Interdisciplinary Team meetings to discuss high risk patients (severe chronic pain, SUD/OUD, depression and/or anxiety)

Vecchio, et al, Psychiatry Res. 2020
Thank you!