Field Notes

Opioid Overdose in Taos, New Mexico

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In 1898, Bayer Pharmaceuticals introduced heroin to America. Today in the United States, modern prescription pain medications have surpassed heroin in overdose deaths, resulting in nearly 19,000 fatalities annually (compared to 10,574 overdose deaths per year attributed to heroin). In low-income, rural communities suffering from this epidemic, efforts are underway to reduce harm associated with opioids, including pain medication and heroin, and to increase access to naloxone, a life-saving opioid antagonist. A better anthropological perspective on this epidemic is needed to understand the social and cultural factors of drug overdose and its control. This study, conducted in Taos County, New Mexico, utilizes participant observation among local medical professionals to examine their unique experiences and perspectives on the topic of opioid overdose in this community. A total of 1616 demographically varied medical workers in Taos also served as informants through semi-structured interviews conducted for this qualitative analysis. Our findings indicate that prescription and illicit opioid abuse are intertwined and affect a wide range of people in Taos. Local attitudes toward treatment including concerns regarding treatment efficacy and social stigma are also important considerations. This study illustrates the multi-faceted complexity of overdose culture and reveals the need for additional attention to existing treatments, increased education and more accessible resources.

Introduction

> "Of all of the nations in the world, America consumes the most opium in one form or another…The habit has this Nation in a grip, to an astonishing extent. Our prisons and our hospitals are full of victims of it, and it has robbed ten thousands of business men [and women] of sense…The drug habit has spread throughout America until it threatens us with very serious disaster."[2]

What is most striking about these statements is not the dismal picture they paint, but that the New York Times published them over 100 years ago.

Despite 100 years of progress, including the establishment of major public health organizations and the allocation of government resources, the problem of drug overdose is worse nowthan ever before.[2] According to the Centers for Disease Control and Prevention (CDC), 120 people die every day from drug overdoses, totaling approximately 43,000 deaths per year.[3] The majority of these overdose deaths result from the abuse of prescription opioids such as morphine, oxycodone and codeine.[3]

The CDC has declared that opioid overdose, partnered with widespread addiction, is an epidemic in America. More than 21 million Americans are addicted to prescription opioids, and 467,000 others are addicted to heroin.[2] After West Virginia, New Mexico has the highest rate for drug poisoning deaths in the U.S. at 27.3 fatal overdoses per 100,000 people, which is nearly twice the national rate (14.7 per 100,000). Taos County and its neighbors in northern New Mexico have the highest rates within the state (up to 67.7 deaths per 100,000 people). The nature of overdose as an epidemic demands analysis from an interdisciplinary approach that evaluates the biological, psychological and social factors of addiction. This study considers each of these influences in a holistic, location-specific manner.

Taos, New Mexico, is home to a diverse community with extensive history. Taos County spans a total area of 2,203 square miles and is home to 32,907 residents—approximately 15 people per square mile. The median household income in the area is $35,823. The median age is 40. 86.6 percent of persons over 25 years old in Taos have graduated high school. 28.9 percent of this group has earned a bachelor's degree or higher level of education. The three most highly represented ethnic groups in Taos are Hispanic or Latino (56.1%), Caucasian (36.1%) and American Indian (7.4%). The Taos Pueblo is also located within Taos County and was the site of many early historical and cultural events in the area. Currently, about 150 Pueblo natives live on this land full-time, and the Pueblo itself is attached to a reservation of about 99 thousand acres.[6] In addition, the city of Taos is a popular tourist destination, known for its natural beauty at the foot of the Sangre de Cristo mountain range, the thriving art scene and a rich cultural heritage.

In this setting, opioid overdose is a complex problem, and thus multiple intervention points are required. Factors of opioid overdose in Taos include: (1) historical trauma (involving inter-generational substance abuse) suffered by indigenous and migrant groups heavily represented in the population of this area; (2) the pharmacology of opioids and its physiological influence; (3) geography, including location along trafficking routes for Mexican black tar heroin, rural locale and an associated lack of resources. and (4) inadequate policies, such as low prescribing standards and insufficient treatment methods. Given the breadth of factors and complexity of the problem, community-wide involvement from multiple intervention points is necessary to resolve the opioid overdose epidemic. This study addresses three inter-connected classifications of factors implicated in opioid overdose in Taos, New Mexico: the biological, the psychological and the social.

Historical Overview

The term "historical trauma," a concept used in psychological and social scientific literatures, refers to cumulative emotional and psychological wounding, extending over an individual lifespan or across generations and caused by traumatic experiences. For example, historical trauma has been studied through longstanding clinical observations of the deleterious psychological effects of the Holocaust, both among survivors and their descendants. Contemporary Native Americans are another such group that has been shown to suffer from disproportionately high levels of psychological distress as the descendants of North America's indigenous people. European colonial policies and practices of ethnocide subjugated native groups and ultimately led to the distress that characterizes historical trauma among native peoples.

The relationship between substance abuse and historical trauma has been substantiated by research, including the work of Joseph Gone, who has shown the importance of addressing historical trauma in his work with clients in a substance-abuse treatment program on a Northern Algonquian reservation in Canada.[9] Historical trauma thus offers an explanation for the intergenerational accumulation of risk for poor mental health, including addiction.

The cultural conflict in Taos that has led to intergenerational historical trauma began over 450 years ago when Spanish conquistadors arrived at the region. At the Taos Pueblo, the conquistadors found one of the oldest continuously inhabited communities in America. Spanish settlers established Catholicism and enforced a strict conformity to its doctrines in the upper Rio Grande Valley. Rising cultural and religious tensions eventually led to a resistance by the Acoma people.

In retaliation for the violent resistance to Spanish rule, over 500 Acoma people were killed, and hundreds of others were enslaved during the 1598 Acoma Massacre; this event instilled a deep fear and resentment of the Spanish in the region for many years. Additional unrest permeated the area in the 1670s as nomadic bands of Apache and Comanche tribes raided the Pueblos and Spanish settlements. These conflicts culminated in a large-scale rebellion among 46 Pueblo communities across northern New Mexico. In August of 1680, all Spanish settlements were destroyed and Santa Fe (70 miles south of Taos) was besieged during the Pueblo Revolt. After the revolt, each Pueblo community governed themselves, but the raids by other native groups continued. The Pueblo Revolt lives on in the cultural memory of the Pueblo people today as a symbol of their independence and cultural heritage.

Then, with Spanish reconquest in 1692, a balance of cultural diversity was achieved in the region, as is seen today. New Spanish rule was still imperfect in its effectiveness and periodically oppressive and severe, but the defiant Pueblo people retained a strong sense of rights, group identity and separation from surrounding groups.

Newcomers again arrived in Taos during the 19th century as wagon trains and eastern merchants followed the trailblazers of US westward expansion. Cultural diversity in the area (beginning at this time to also include Anglo-American influence) continued to expand, giving the region its distinctive multicultural personality and history. Occupation of New Mexico by the United States in 1847 during the Mexican-American War led to another violent uprising by both Taos Pueblo Indians and Hispano nationalists, who faced land grant losses; several convicted rebels were sentenced and hung in Taos Plaza. The 1848 Treaty of Hildalgo officially declared New Mexico, along with Texas, Arizona and California, as part of the United States.

Clashing cultures and conflict over the past 400 years have created in Taos a unique cultural atmosphere that is both tolerant and segregated. These often violent historical events have had a widespread psychological impact over time, not only among the Pueblo people but also among the other cultural groups that have suffered tremendously. With regard to ownership and belonging,

Drug Overdose Prevention/Education Study ID#: _____

A. Background Information:

Please tell me your…
1. Sex: Male Female
2. What is your race/ethnicity: _____
3. Age (in years): _____
4. Occupation: _____
5. Years working in occupation: _____
6. Highest level of education: _____

B. Interview Questions:

1. Please tell me what you know about drug overdoses. How prevalent is the problem?
2. How serious of a problem do you think it is?
3. What drugs are most likely to result in overdoses? Are prescription drugs more or less of a problem than illegal drugs like heroin?
4. To what extent do you think the community is aware of the problem? (Individuals, community leaders, etc.)
5. How are drug overdoses treated? How effective are the available treatments? Have you heard of naloxone? Do you think the medical community is well equipped to deal with overdoses?
6. What can be done to prevent overdoses?
7. Do you have any other comments about the problem of drug overdose?

Figure 1: Semi-Structured Interview Questions

Interview Coding *

* Scales correspond with interview question number

1. a. Subject's general knowledge of drug overdose:

1 – knows nothing
2 – knowledge below average – gives one fact
3 – general knowledge, average – gives two facts
4 – knowledge above average – gives three facts
5 – exemplary understanding of issue and complexities – gives 4+ facts
No response

1. b. Does subject consider problem to be prevalent in Taos?

1 – not prevalent
2 – barely prevalent
3 – prevalent
4 – more prevalent
5 – extremely prevalent

2. Does subject consider the problem to be serious?

1 – not serious, not a problem
2 – somewhat of a problem, not serious
3 – a problem, serious
4 – a big problem, very serious
5 – a big problem, urgently serious

3. a. Subject knows which drugs are most likely to result in an overdose:

1 – Unsure
2 – Unsure, guesses
3 – answers with some confidence, no evidence
4 – answers confidently, anecdotal evidence
5 – knows with statistical or proven evidence
No response

3. b. Which is more serious, prescription drugs or illicit drugs?

1 – prescription
2 – illicit
3 – equal
4 – unsure

4. Subject's opinion of community awareness:

1 – community not aware
2 – community needs more awareness
3 – community is aware, does not act
4 – community is aware, taking few steps
5 – community is aware, doing a lot
No response

5. a. Subject's knowledge of overdose treatment:

1 – knows nothing – gives no facts
2 – knowledge below average – gives one fact
3 – general knowledge, average – gives two facts
4 – knowledge above average – gives three facts
5 – exemplary understanding of treatment and function – gives 4+ facts
No response

5. b. Subject's confidence in treatment efficacy:

1 – does not work at all
2 – works rarely
3 – works adequately
4 – works well
5 – works nearly always

5. c. Subject's knowledge of Naloxone:

1 – knows nothing – gives no facts
2 – knowledge below average – gives one fact
3 – general knowledge, average – gives two facts
4 – knowledge above average – gives three facts
5 – exemplary understanding of Naloxone and its use – gives 4+ facts
No response

5. d. Subject's confidence in medical community:

1 – not equipped
2 – barely equipped
3 – somewhat equipped
4 – well equipped
5 – highly proficient

6. Subject's knowledge/suggestions for prevention:

1 – knows nothing, no suggestions
2 – knowledge below average, one suggestion
3 – general knowledge, average, two suggestions
4 – knowledge above average, three suggestions
5 – exemplary understanding of prevention, 4+ suggestions

Figure 2: Codes for Interpreting Interview Responses

loss has characterized the region for many years and has left a lasting and collective impact on nearly all of its inhabitants: Pueblo natives, Hispanics, Anglo-Americans and more recent Latino immigrants. These painful sentiments include loss of people, land, family and culture. Such loss and suffering characterizes the historical trauma felt broadly in Taos. Through interviews and analysis of the healing discourse used in a community-based treatment center for substance abuse that address historical trauma, Joseph Gone has shown that acknowledging historical trauma bridges evidence-based treatment and employing culturally sensitive interventions can improve therapeutic outcomes.[9] Thus, historical trauma, as illustrated through the major cultural conflicts outlined, should be considered a major psychological and social factor to the problem of opioid overdose in Taos, New Mexico.

Biological Background

Biological factors of opioid overdose are also significant to understanding the epidemic. Opioids are synthetic or partly synthetic drugs that bind to opioid receptors throughout the body and reduce the transmission of pain messages to the brain, ultimately reducing the feeling of pain. Some commonly prescribed opioids include fentanyl, methadone, hydrocodone and oxycodone. Opiates, on the other hand, produce the same effect as opioids but are derived naturally from opium; examples include morphine, codeine and heroin. The terms 'opioid' and 'opiate' are used interchangeably. When an individual who is not experiencing physical pain, takes either opioids or opiates the person feels elated, then relaxed or drowsy. The reinforcing and rewarding effects of opioids, such as euphoria associated with opioid abuse, involve the mesolimbic dopamine system. This system is an evolutionarily old pathway in the brain that carries dopamine from one area in the brain to another and is responsible for controlling the brain's pleasure and reward centers.

Opioid tolerance and physical dependence occur when long-term use creates several cellular changes. Opioid receptors gradually become decreasingly responsive to opioid stimulation. Thus, tolerance increases as greater amounts of opioids are needed to release the same amount of dopamine. Physical withdrawal significantly contributes to opioid dependence and addiction and occurs after tolerance has already developed. The withdrawal phenomenon occurs after repeated exposure to escalating dosages of opioids, when the brain adapts to function normally in the presence of the drug and abnormally in its absence. In the absence of the opioid, enhanced hormone activity triggers jitters, anxiety, muscle cramps and diarrhea.[13]

Nearly every incident of opioid overdose is the result of respiratory arrest, perhaps the most serious adverse effect. This occurs when the opioid agonist produces respiratory depression to the point of apnea by acting on the respiratory centers of the brainstem. Opioids can depress any or all of the phases of respiratory activity, including rate, minute volume and tidal exchange.[13] Furthermore, the accumulation of CO_2 stimulates central chemoreceptors to increase respiratory rate as a means of compensation. However, this only masks the patient's degree of respiratory depression, and untreated respiratory depression can be fatal.

Naloxone, buprenorphine and Suboxone (a combination of the former two), all opioids, are forms of medication-assisted treatments to opioid overdose and addiction. Naloxone, also known by its brand name, Narcan, is an opioid antagonist. It reverses the effects of morphine-like agonists by blocking access to opioid receptors and can therefore revive patients who have suffered an overdose.[12] Withdrawal symptoms often present immediately when an overdose is reversed using naloxone. Buprenorphine is a partial opioid agonist and is used in treatment to wean patients off more dangerous opioid agonists by minimizing adverse withdrawal symptoms. The therapeutic response of buprenorphine depends heavily on the dosage. At low doses, potential for tolerance and

dependence is minimal and can alleviate cravings and compulsive drug use while normalizing the hormonal disruption caused by prior opioid abuse. However, if buprenorphine is used at higher dosages or abused to elicit a high, then withdrawal symptoms will occur. Only by using relatively large doses of naloxone can the respiratory depressant effects of buprenorphine be reversed.[13] Suboxone combines the opioid antagonist, naloxone, with the partial opioid agonist, buprenorphine, to draw on the strengths of each while minimizing their adverse effects and potential for abuse. When taken as directed (sublingually), buprenorphine will be well absorbed and naloxone will not. If taken intravenously, the reverse effect will occur and withdrawal symptoms will transpire. This both prevents overdose and limits abuse (high-seeking or drug-selling behaviors) liability in the opioid-using community.[14]

Methods

This study follows a holistic approach to the problem of opioid addiction in Taos County and draws on the biopsychosocial approach to human illness. (1) Biologically, the pharmacology of existing treatments is reviewed; (2) the psychological realms of physical, spiritual and emotional pain are evaluated through ethnographic interview and participant observation. And finally, (3) social determinants including historical trauma, various interpersonal relationships and cultural contact are explored through sample design and semi-structured interview (Figure 1).

For nearly 150 hours over the course of eight weeks between June and August 2015, I worked directly with Taos County Emergency Medical Services (EMS), building personal relationships with emergency medical technicians (EMTs) and paramedics. An additional 150 hours during this eight-week period were spent observing and assisting staff at Taos County's single hospital, Holy Cross Hospital. The emergency room has 12 beds and sees an average of 42 patients per day. After six weeks of intensive observation and limited hands-on involvement, I performed the duties of an on-call educator, providing general overdose information, including how to use prescribed naloxone, for at-risk patients prior to ER discharge. This level of access and trust promoted in-depth information gathering and expanded my knowledge of Taos County's opioid addiction response network. In short, my familiarity with and participation in the daily operations of staff supported an anthropological and holistic approach to the subject of opioid use.

I interviewed 16 medical providers whom I had come to know during this eight-week period in Taos. Subjects ranged in age from 23 to 61 years and were members of each major cultural group in the county: Caucasian, Native American and Hispanics of both Spanish and Mexican descent. Interviews were solicited from the individuals with whom I built working relationships over the course of eight weeks in Taos, and participation was voluntary. Interviews lasted between ten and 45 minutes and were conducted at the main station for Taos County Emergency Services and at Holy Cross Hospital. The duration of each interview depended on the amount of elaboration per question and the inclusion of any additional information provided by the participant. Professions represented by these interviews include emergency medical technician, paramedic, pharmacist, community health worker, clinical social worker, prevention specialist and clinic administrator. Subjects were asked about their general knowledge of the issue, its prevalence in Taos, their perception of community awareness and various dangers and treatments associated with both illicit and prescribed opioids. A complete informed consent discussion (approved by the SMU IRB) preceded each interview. No one declined or withdrew.

Finally, interviews were coded using interpretive analysis and through the assignment of scaled response to a limited number of questions (Appendix, Figure 2). Codes were considered thematic if they occurred across a minimum of six interviews.

Results

The key findings of this research specifically draw on recurring themes throughout the interviews conducted. The most significant findings of this research include (1) the pervasiveness of opioid overdose in Taos, (2) the relationship between prescription and illicit drug abuse and (3) the prevailing negative attitudes regarding available treatments.

Pervasiveness of Opioid Overdose

Every subject who was interviewed considered the problem of overdose in Taos to be either very prevalent or extremely prevalent. The problem was also widely considered by interview subjects to be serious. 58% considered the problem to be very serious, and 33% consider it to be urgently serious. A prevention specialist supported her claim saying, "last year we had an opioid reversal of a 13 year-old—this is serious." Another participant considered the problem to be serious but inevitable—perhaps a reaction to widely experienced feelings of helplessness, as discussed later in this paper.

As previous research conducted on substance abuse in the upper Rio Grande suggests, Taos County EMS was called to respond to many incidents of gang members on heroin, but the opioid problem proved to be far more pervasive. During my time working closely with the Taos County EMS ambulance service, we treated elderly patients, a young mother addicted to pain medication, as well as a man who attempted suicide and a woman who had accidentally mixed up her pills. We responded to drug-related calls at the prison, the Pueblo and at wealthy ranch estates. There does not appear to be substantial demographic differentiation corresponding generally to the impact of opioid abuse and overdose in Taos.

My own first-hand experiences with the diversity of individuals afflicted by opioid addiction were reiterated during the interviews. "In the prison, the demographic that I see most affected by heroin is low-income, no jobs… gang members. They come into jail again and again, and immediately they know to ask for the withdrawal packet," explained an EMT who also worked in the local jail. However, he continued by describing another demographic completely, represented by a formerly well-respected nurse in the community, whose life was destroyed by opioid addiction:

> "There's a nurse in jail right now who was an RN [registered nurse] at the hospital; he was suffering from back pain. He used to work at the Taos Living Center [(TLC), a local nursing home], and he was starting to steal the patients' medications. He got caught and went to rehab. TLC fired him, Holy Cross hired him in the ER and he started stealing morphine… then he started doing heroin. They found him in the employee bathroom of the ER with a needle in his arm, full of heroin. There are people that get into it that way - they can't get their prescriptions filled. Now he's looking at 29 years (for drug and other associated charges). He was an awesome ER nurse, but he just got hooked."

Across measures of age, gender and ethnicity, Taos consistently has higher rates of opioid prescription, usage and overdose compared to that of New Mexico and the United States.[4] On the theme of pervasiveness across the community, another EMT proposed, "It's rich people, honors students and athletes. Everyone is using. It's a network that just keeps growing."

While opioid overdose spans many demographic groups in Taos, statistics show that the overdose rate is especially high for middle-aged Hispanic men in Taos County (about 72 per 100,000).[4] Ethnographer Angela Garcia demonstrated in her book, The Pastoral Clinic: Addiction and Dispossession along the Rio Grande, that among Hispanic families living in Northern New Mexico, older family members often become the primary sources of care for addicts, so the problem never comes to the attention of health workers. This phenomenon is commonly known as m'ijito-itis—as in, "I'll do anything for m'ijo [my child]".[15] A Hispanic paramedic expresses similar concerns specific to her ethnic group:

> "There is a large Hispanic community here and people here baby their kids. Thirty year-old men should not be living with their moms… If parents don't want to accept that their kid does drugs, they say 'oh, not m'ijito, something's wrong with him'. It becomes everyone else's problem. Here's an example: I have this friend… her son was fourteen when he started hanging out with a kid who introduced him to huffing cleaner [inhaling chemical vapors to elicit a high]. He did it for years. People rumored about it, but it wasn't until her son died—they found him in a bathroom with hundreds of cans of duster. So I go see

> my friend. All she was concerned about is what people would say if they found out. She was embarrassed. She said she offered to get him help, but he told her that he'd be mad at her. I mean, I'd rather my son be pissed off and alive."

Garcia's attention to the role of m'ijito-itis is reiterated by this paramedic's narrative of her friend's reluctance to admit the severity of her son's eventually fatal addiction. Although the chemical vapor involved in the provided narrative is a non-opioid, Garcia has shown that m'ijito-itis also applies to opioid addiction. For example, Garcia reports of a mother who frequently bought heroin for her child because she hated to witness the extreme pain of her child experiencing withdrawal symptoms.[15]

In short, opioid addiction in its numerous forms touches most segments of the diverse Taos County community. However, there is some variation across demographic groups depending on accessibility, price point and reputation associated with different drug types.

Illicit vs. Prescription Drugs

Generally, there is little concrete knowledge among interview subjects distinguishing the dangers of prescription and illicit drugs, but opinions regarding the two types of opioid differed widely. With regard to prescription versus illicit opioids, 50% of interview respondents believed prescription medications to be more dangerous; 33% believed the opposite, that illicit drugs are more dangerous, and one person believed the two types pose an equal threat. The responses provided here align quite well with overdose death rate data. In Taos, 48% of overdoses were attributed to prescription opioids. 34% were attributed to heroin. Although the "active ingredient" of heroin and prescription opioids is the same, the danger of heroin use is compounded by a lack of control over drug purity and the possibility of contamination. Similarly, prescription drugs are most dangerous when taken recreationally using variable methods to increase the euphoric effect, such as mixing or crushing pills prior to snorting or injecting the powder.

The relationship between prescription and illicit drugs and their respective reputations is complicated in several aspects: (1) there is a social stigma surrounding illicit drug use and (2) the danger of prescription drugs is often understated because they are perceived to be legally prescribed (although they are often prescribed to someone other than the user). "Prescription drug abuse is different [from illicit drug abuse] because the medication is dispensed by the medical profession; it's an iatrogenic problem, caused by the medical community because of overprescribing and the availability of the drugs," explained a pharmacist and Holy Cross Hospital director of health outreach. He continued, "A patient once asked me, 'why would anyone buy heroin when you can just go to your doctor?'" This statement reflects local considerations regarding use of each drug type, decisions which are made by weighing the risks and rewards of prescription and illicit opioids. In this case, the statement also confirmed the perceived ease of access to prescribed opioids.

Several respondents mentioned the transition from prescription to illicit drugs. "There's a group of people, mostly between the ages of 27 to 45, who started using pills [prescription opioids] years ago. But once pills got too expensive, they started using heroin," explained a paramedic. If one type of opioid becomes too difficult or expensive to obtain, the same individual may use the other type interchangeably, even varying daily. "People steal the prescription drugs from their mom, their grandparents. It's not difficult or expensive to swipe a bottle from a family member," stated a young EMT. "During my time of employment with the drug court, I mostly saw cases involving opioids." The pervasiveness of opioids compared to other drug types seen in court is thus linked to ease of access and the multiple avenues of obtaining the high, through either prescribed pain medication or heroin.

In terms of prevention efficacy statistics, the interchangeability of prescription and illegal opioids has proven true. A prevention specialist explained, "If you start working on prescription drug abuse and start putting a cap on amount of prescriptions, then we'll see an increase in illicit drugs; in prevention, it's become a balancing act." Therefore, effective solutions must target the underlying causes of opioid addiction while limiting access to both illicit and prescription drugs simultaneously.

Attitudes on Treatment and Prevention

Confidence toward current treatment efficacy ranges widely. Multiple subjects represented each of five categories, ranging from "does not work at all" to "nearly always works," practically evenly across the board. Regarding naloxone, specifically, most subjects interviewed (50%) had a general knowledge of the treatment, offering two facts or comments about naloxone, while 20% gave less information, and 30% gave slightly more. 83% of subjects believed the medical community to be at least somewhat well equipped to deal with overdose. One subject expressed a complete lack of confidence in the ability of the medical community to handle overdose situations—"The emergency room is a revolving door, because there are so many people to take care of. You overdose, you're revived; you're in, you're out. And pretty soon, you're back with another overdose…the treatments aren't effective because people won't change unless they want to change," stated the paramedic matter-of-factly. These varied findings reveal the wide range of knowledge and opinion within the Taos medical community regarding the treatment of opioid overdose.

The local drug court system (as previously mentioned) is one avenue for treatment related to illegal drug use. The drug courts operate to keep non-violent offenders drug-free and drug-free through intense judicial oversight, treatment, supervision, mandatory periodic drug testing and the use of appropriate sanctions, incentives and other community-based rehabilitation

"As for a society, the utility of pain must also be reconciled; pain serves the purpose of communicating when something is going on within us."

services. "Most [opioid users] don't have jobs, so they steal to support their habit… there are also a number of gangs that center on the buying and selling of these drugs in Taos," an EMT explained while discussing the drug court program. Many times, individuals in the drug court program begin medication-assisted treatment using take-home, prescribed buprenorphine (partial opioid agonist), often combined with naloxone (opioid antagonist) and known as Suboxone, to minimize withdrawal symptoms.

The professionals interviewed in this study generally regarded the efficacy of the Suboxone treatment method pessimistically. The controversial ingredient in Suboxone is buprenorphine; as previously discussed, buprenorphine, like other many other opioids, is addictive and has a high potential for overdose depending on dosage. "The Suboxone-prescribing doctors have a cap of how many patients that they can see. Usually that cap is met by the court orders and those who are really persistent. There are not enough resources to go around… Suboxone is supposed to be used for the withdrawal period—and for that, it works. But people come out of jail, having already kicked the habit and try to get on a Suboxone program just to abuse it," explained an EMT and former employee of the drug court. The pharmacist that I interviewed had an alternate view of the treatment:

> "Originally, I had an aversion [to Suboxone], thinking, 'so, you have a problem with opioid dependence, let me give you an opioid!' It made no sense. And knowing that the drug was diverted and abused to a great degree really bothered me. But lately, I've come to realize that the goal should (1) be abstinence and recovery, emphasis on recovery that allows them to live happy and useful lives without opioid addiction. For some people, that is not a possibility. (2) There's a group of people that Suboxone can help, but there needs to be an exit strategy with a very structured plan. Then, (3) there's a third population of people that suffer from the disease of addiction, and they will never want or be able to lead normal lives. They may need to be on Suboxone indefinitely, reducing the harm associated with abhorrent behaviors. Even still, there must be surveillance, monitoring, pill counts and urine tests."

Nevertheless, alternative options to buprenorphine are very limited for addicts seeking therapy in Taos County. During her interview, a clinical social worker at Holy Cross Hospital explained that treatment options are often too expensive or limited in capacity for those who urgently need them. For example, one local treatment facility charges $24,000 for the first 30 days, and others have waiting lists up to six months long. "The population in our community can't afford to go to the treatment facilities in our community," stated a local specialist in prevention. There are a few options that are more affordable in larger cities such as Santa Fe and Albuquerque, but for many, these are still inaccessible.

In light of this situation, many medical professionals interviewed for this study echoed a need for naloxone to be more readily available for administration by police and the friends and family members of at-risk individuals. The New Mexico Department of Health public health office in Taos will prescribe naloxone, free of charge, to walk-ins who are concerned about themselves, a family member or a friend who may be at risk for an opiate overdose as a means of harm reduction. Alternately, "People often pull up to the ER with their friend who has overdosed, throw them out and drive away; unless the ambulance or someone sees them, they die right there. People are afraid of the legal ramifications if they bring in their friend who has overdosed, but they are also high themselves," explained another EMT who has also worked in the prison. Good Samaritan laws do not protect individuals who are high and seeking assistance for someone else if the former individual has any outstanding warrants for arrest.

I visited this public health office myself without disclosing my intention to observe the process of a walk-in obtaining naloxone. I was asked for my social security number, income, drug and sexual histories, address, government-issued identification card and emergency contact information. I was trained to administer naloxone and informed on other harm reduction programs such as clean needle exchange and local drop boxes for disposing of prescription opioids. I was prescribed up to four doses of naloxone and was encouraged to return for refills as needed. Though the prescription was in my name, I was told I could give it to anyone who needed it. This would all be carefully documented. New Mexico and several other states permit third-party prescribing as a means of prevention. Finally, I signed a confidentiality form and was on my way, naloxone in hand. Overall, the process went smoothly and seemed to be an effective way of distributing the opioid antagonist to those who wanted it, especially with proper publicity for the service. This program, however, is potentially problematic for individuals who are unable to provide a social security number or government ID.

Interview subjects had few strong suggestions for prevention of opioid overdose in the community; 42% offered only one solution, 33% offered two or three basic suggestions and 25% had an above average knowledge of prevention strategies, offering three or more well-considered suggestions. "This problem is a boat with a bunch of holes in it. We have to just start plugging the holes," urged a prevention specialist, "Naloxone plugs one. Early education plugs another. We need to create more community support and work with medical providers and prescribers." Every interview subject who answered this question explicitly stated a need for more educational programming in the community. EMTs and paramedics especially reiterated the need for education in the community, beginning at a young age. They told stories of fifth graders drunk at school and middle schoolers smoking heroin from their e-cigarettes during class. A paramedic reiterates the social factors of the issue and a need for early education: "A lot of it comes down to learned behaviors… eight year-olds don't need to be up at two A.M. on a Tuesday because someone overdosed in the other room. It impacts them. They're tired. They don't eat. They can't do well in school. Then the cycle restarts. We need to catch our kids young, even in elementary school. Once kids are old enough, they won't care what you say to them." Some educational programming exists in Taos, but interview subjects assess that the programming alone is insufficient.

Thus, socioeconomic variables are relevant to the three major themes of this research. Although opioid addiction touches all demographics in Taos County, the form and source of the opioids used and the treatments sought vary according to availability and ease of access.

Discussion

By exploring biological, psychological and sociological explanatory factors, we can begin to understand the pervasiveness of opioid overdose, the relationship between prescription and illicit drug abuse and local attitudes toward treatment.

Biologically, opioid use causes the release of dopamine, producing a pleasure sensation that the brain records as a memory, associating the positive feelings with the circumstances and environment in which they occurred; these memories—conditioned associations—may elicit strong cravings for the substance when the dependent or addicted user reencounters the same people, places or things.[13] With regard to small, tight-knit communities like Taos, conditioned association of opioids, with a variety of other social cues and supports, may be exacerbating the problem among all groups as the network of associations continues to grow. The phenomenon of conditioned association may help physiologically explain why individuals who are addicted to opioids often relapse and feel that they cannot escape the circumstances (people, memories, etc.) that contributed to their addiction in the first place.

Numerous clinical studies have also shown that those who use drugs are more vulnerable to both physical and psychological stress than the general population. One pharmacological explanation for this phenomenon is based on the fact that opioids increase cortisol production. Cortisol is a critical hormone in the body's response to stress, as it increases the activity level of the mesolimbic reward system. This mechanism is one neurobiological factor contributing to the person's desire to begin using drugs, as well as his or her compulsion to keep taking them.[13] From an applied psychological standpoint, "This is a cycle that affects you both mentally and physically. You'll have withdrawals. [Opioid addiction] will damage your self-worth, sense of purpose. When you self-deprecate like

that, the only thing that will fix it is getting high again," a paramedic explained.

This pharmacological explanation also has a social component rooted in local prescription practices. The iatrogenic nature of the prescription opioid problem relates to these prescribing standards. A pharmacist explained in our interview:

> "There is very little data that doses over 200 milligrams morphine equivalency per day, or using them for longer than a year, are effective—in fact, if you're on an opioid medication for an acute pain event after 90 days, there's a 50% chance in our medical system that you'll be on that same medication after five years – and there's also data to prove that this can be harmful, causing rebound hyperalgesia [an abnormally heightened sensitivity to pain]. We may be creating, and ultimately treating, the pain that we're trying to prevent."

In terms of prescription and treatment, many providers expressed confidence in naloxone but the efficacy of medication-assisted therapies including buprenorphine and Suboxone remains controversial. Following detox treatment, some addicts seek highs through their new prescribed medication. Some argue that the popular detox drug, buprenorphine, was not invented to end the problem of opioid addiction, but rather to perpetuate it for profit.[2] When using the drug recreationally, some users claim that their high is better on Suboxone than on heroin or prescription opioids. An EMT told me about a conversation that he'd had with a patient whom he has revived using naloxone five times in the past five years: "He told me that he's been off heroin for awhile now. He's not quitting, he's switching; he says the high is even better on Suboxone, for which he is legally prescribed!" Thus, the pattern of transition from addiction to prescription medications to heroin abuse (discussed previously) may again be reversed if patients with a heroin addiction become addicted to their treatment; the medical community must take caution.

From a broader social standpoint, the concept of historical trauma rooted in the complex cultural history in Taos (see Historical Overview) is multilayered and is not solely centered on the individual. This differs from a "typical Eurocentric perspective of illness and treatment, which tends to reduce suffering to discrete illness with individual causes and solutions."[7] A Native American paramedic of 11 years explained, "There is a lot of history here [in Taos]. There are these big family networks that are steeped in tradition. These cultural networks create a tough dynamic with the large infrastructure of families and their politics. People don't openly talk about these problems, only behind each other's backs." In another interview, a local prevention specialist added, "There are families in our community in which parents and grandparents will do drugs with their children and grandchildren, and uncles share heroin with their nephews." Historical loss symptoms include societal-environmental concerns, such as domestic violence, poverty, lack of education and unemployment; psychological concerns such as substance abuse and mental health disorders including alcoholism, PTSD, depression and suicide and additional physiological concerns.[11]

Several of the risk factors for substance abuse are supported by historical trauma theory. In Taos County, opioid abuse may be related to low self-esteem, loss of cultural identity, history of abuse and neglect and self-medication due to feelings of helplessness. In explaining the risk factors of addiction in Taos, a clinical social worker asked:

"Can you get a job? Were you encouraged in your education growing up? To be from here has its own burden and impact. How much ownership do you feel in Taos? Does belonging to one of these groups [Anglo-American, Spanish, Mexican, Native American] in Taos affect how you see the world and how the world sees you? Were you given opportunities, your fair share?"

The aforementioned societal-environmental concerns are also particularly relevant, as they are found to be statistically more problematic in Taos when compared to the national average; 25.3% of the population are below poverty level in Taos versus 15.4% nationally.[5] Treatment for conditions that can often result from historical trauma, including substance abuse and overdose prevention, should incorporate validation of grief and loss associated with historical trauma.[17]

In terms of historical loss, land in northern New Mexico is significant. In fact, only a generation ago, residents still lived primarily off the land, working the forests, ranching and farming. "There is some resentment (among many multi-generation residents) to the new-coming Anglos with money," explained a clinical social worker. "Because they have this money, and now everyone else has to pay more. If you're really going to get angry about it, you ask, 'who sold out?' Maybe this land has been in your family all this time, but you get a tempting offer and now you've sold out." Other subjects reiterated the sentiments that many Taos residents are unable to afford living in the same community that they have belonged to for generations, as prices and fences have gone up everywhere.

> "When pain becomes too great for someone to overcome individually – when they begin to drown – the community is indispensable."

Garcia writes, "Memories and sentiments regarding land loss remain powerful tropes… locals draw a connection between land loss, poverty and addiction… but which was 'lost' is still there to see: it's all around them in the mountains, rivers, mesas and buttes." Garcia further questions how the land that is present, yet out of reach, in a context in which land is central to cultural identity and economic survival, may contribute to intergenerational experiences of loss and the attempt to cope through means such as heroin abuse. The poverty, isolation and the cultural and temporal "rootedness" of northern New Mexico create an imagined regional geography that has become the basis for growing tourism to the area. The cultural politics of this view perpetuate the dispossession and displacement of the local people.[15] "There's a drug culture in Taos. You hear about beauty, tourism. But there's a very dark underbelly to what's happening here. And that's not new," explained a paramedic whose family has lived in Taos for many generations.

The National Drug Intelligence Center (2008) reports that the geography of Taos also contributes to high rates of overdose associated with the potency of Mexican black tar heroin, which is transported throughout much of the United States via northern New Mexico. Black tar heroin is less refined than many other types of heroin, making it easier to produce and cheaper to buy. The purity level of black tar heroin is highly variable. "You take X amount [of black tar heroin] one time, and it's 10% pure, and the next time you take X amount it's 90% pure," explained a clinical social worker, "and you can guess what happens." The geographical location of Taos along trafficking routes for black tar heroin is thus another factor contributing to the prevalence of opioid overdose in the region.

The rural geography of Taos is also significant. In rural areas across the United States, heroin death counts increased by over 900% between 2011 and 2014. The rural-urban differences in opioid abuse, specifically, can be explained by three factors: (1) considerably greater prescription in rural areas, which allows for the rise of illegal drug markets; (2) stronger rural, social and kinship network relationships, which may result in drug diversion and distribution; (3) economic stressors that may result in greater vulnerability to general drug use, abuse and possibly eventual overdose.[19]

Associated with the rural geography of Taos County and in part due to the situation of poverty that many opiate addicts face here is a significant lack of resources and treatment options. The overdose problem is exacerbated by the fact that rural residents are less likely to have access to life-saving overdose treatments such as naloxone. The International Journal of Drug Policy recently published a study concluding that the national opioid overdose death rate is 45% higher in rural areas than in urban ones, but naloxone use by rural EMS staff is only 22.5% higher. Still, some are weary of making naloxone widely available. "You can't use Narcan to save yourself. Some of these people will die with the rescue kit in their pocket," explained an EMT. "Or [opioid users] will be less cautious, knowing that they have the antidote (naloxone)," another EMT added. This thinking is likely based on moral concerns rather than factual information, as studies do not support these claims. Increase in access to naloxone has shown no increase in risky behaviors associated with opioid use.

In summary, opioid overdose pervasiveness in Taos, the relationship between prescription and illegal opioids and local attitudes toward treatment can be understood in terms of the pharmacology of opioids presented, pointing to the role of physical addiction in overdose incidence. Historical trauma (including inter-generational substance abuse), geography, lack of resources and prescribing standards offer another critical perspective in understanding this epidemic.

Implications and Recommendations

Policy and interventions for Taos County must take into account the cultural and social networks that create and sustain inter-generational patterns of opioid addiction. A second implication surrounds the relationship among stress, opioids and cortisol production. Due to chronic social stressors experienced by Taos County residents, including the various common losses previously discussed, pharmaceutical treatment for opioid abuse should be partnered with interventions addressing environmental and social circumstances.[13] Third, a major policy concern is the lack of treatment plans including non-addictive alternatives to buprenorphine and insufficient distribution of naloxone throughout the community. This calls for collaboration with the prescribing community.

Finally, community-wide recognition of the problem is imperative to harm reduction and in the eventual resolution of this epidemic. This analysis aims to inform, and further research will contribute to that end. The small sample size is one limitation of this study, and future work could elicit more perspectives beyond those of medical professionals in Taos. Specialists from many different fields have varied recommendations, and I suggest that each intervention point be employed where possible. The Holy Cross Hospital director of health outreach describes the opioid problem:

> "Let me tell you a story… so there's a river with babies floating down it. Someone sees these babies and they jump in to rescue them. And they get one or two, but miss three or four. So they go back in the river and these babies are floating down the stream and they spend all day and all night rescuing these kids from certain destruction. And finally they get the idea to go upstream and see where the babies are coming from. And that's what I think about drug addiction. I think that when it hits the emergency room and we can treat an overdose and 'save another life, save another life,' and 'oh, we missed one here and then we save three more and miss another one,' but we really need to go upstream and find out where this is coming from."

By public health standards, greater attention needs to be given to the issue of opioid overdose in America, especially in deeply affected areas such as Taos County, New Mexico. Taos offers interesting and specific insights on opioid addiction in the United States. Many of the factors explored in this paper are applicable elsewhere, especially in rural and historically or culturally conflicted areas. Recommendations offered, including limiting access to opioids and increasing access to treatment resources, are applicable everywhere.

Geographical and environmental factors contribute to a shared sentiment of dispossession and hopelessness, which is felt by families, entire cultural groups and the community at large. This results in consequences such as historical trauma and, more specifically, inter-generational substance abuse that has evolved to include deadly opioid-using habits over time. Understanding the basic pharmaceutical pathways that occur when opioids act upon the body reveals a connection between physical and emotional pain and the conditioned associations that often lead to relapse. A society must also reconcile the utility of pain, which serves the purpose of communicating when a problem is present. Such pain signals may stem from deeper biological, psychological or social origins, and each factor must be evaluated for its potential role in opioid addiction and overdose and should be carefully considered in treatment. When pain becomes too great for someone to overcome individually—when they begin to drown—the community is indispensable. Some must stay to rescue, and others must travel upstream to pull others out, before the water rises above their heads.

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