

The Actor Network that Contributed to the Rise of the Opioid Epidemic

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The Rise of the Opioid Epidemic

The opioid epidemic is one of the most widespread public health crises in the United States, causing 28,000 deaths per year and affecting nearly every race and socioeconomic group (Conrad, 2017). The opioid epidemic began with the overprescribing of opioids by physicians for pain management. Unlike other drug epidemics in the United States, the opioid epidemic sparked from the legal access to opioids from pharmaceutical companies (Trasolini, McKnight, & Dorr, 2018). Opioids are a class of highly addictive drugs that include legally prescribed pain relievers such as oxycodone, hydrocodone, and morphine, and illegally made drugs such as heroin and fentanyl (“Prevent Opioid Abuse and Addiction”, 2019). There are many structural factors in the healthcare system that have contributed to the rise of opioid abuse in the US; therefore, Actor Network Theory (ANT) is used to analyze the relationships between each factor. The relevant stakeholders most important to this paper are physicians, pharmaceutical companies, nurses, pharmacists, and the socioeconomic status of opioid misusers. The structural factors that led to the rise of the opioid epidemic are important to evaluate for the modification of medical restrictions and healthcare policies to prevent a similar event from recurring. Therefore, the primary goal of this research is to understand how structural factors in the medical field led to the growth of the opioid epidemic and determine how that has negatively affected American society.

Research Question and Methods

How did the surrounding actor network contribute to the rise of the opioid epidemic in the United States?

Three methods are employed to uncover the problematic structural factors that contributed to the opioid epidemic. In order to begin to connect all of the relevant stakeholders,

ANT is applied to become more acquainted with each stakeholder and the relationships between them. A network analysis will be used to develop a concise understanding of the most relevant stakeholders of the opioid epidemic in this research: pharmaceutical companies, physicians, pharmacists, and nurses. The network analysis uncovers the organizational structures and hierarchies between each relevant factor. This method allows for the understanding of the social and technical networks that account for the presence and complexity of each relationship. In addition, a policy analysis is used to question the formation and implementation of multi-level pharmaceutical and healthcare policies that drove the rise in the opioid epidemic. This research dives into the policies that were in place during the beginning of the opioid crisis at the end of the twentieth century and compares them to the recent policy changes meant to decrease the abuse of opioids. The breakdown of the transformation of pharmaceutical and healthcare policies aids in explaining how the opioid epidemic spread throughout the United States so rapidly. A historical case study of West Virginia is also conducted to understand the socioeconomic dynamics of the state that made it a susceptible area for the widespread effect of the opioid epidemic. The network analysis, policy analysis, and case study of West Virginia will explain the actor network that contributed to the rise of the opioid epidemic.

The Opioid Epidemic

The opioid epidemic is a drug epidemic that has largely affected the American population because of the high mortality rate throughout the country. Opioids are a highly addictive class of drug that include legally prescribed pain relievers, illegal synthetic opioids such as fentanyl, and heroin (“Prevent Opioid Abuse and Addiction”, 2019). American researchers in the 1980s began to suggest that opioids could be used for pain management for a long period of time causing drug firms to heavily market them (Conrad, 2017). Physicians began to prescribe opioids more often

because of the assertion from American researchers and drug firms (Conrad, 2017). By the late 1990s, the first wave of the opioid epidemic began due to the increased prescription of opioids by physicians (ASPA, 2017). Physicians weren't just influenced by the increased marketing of opioids; they were also given financial incentives for giving patients what they asked for. Therefore, if a patient asked for opioid pain relievers doctors would prescribe them willingly because they were convinced these drugs weren't highly addictive (Conrad, 2017). The increased use of opioids led to opioid addictions that caused an explosion in overdose deaths. In 2017, there were 47,600 overdose deaths caused by opioids, which was 67.8% of all drug overdose deaths that year (CDC, 2019). Due to the increase in mortality rates due to opioids, a public health emergency was declared by the Department of Health and Human Services in 2017 (APSA, 2017). Between 2013 and 2018 there was an increased number of FDA events and policy changes to both address and reduce the opioid epidemic ("Timeline of Selected FDA Activities and Significant Events Addressing Opioid Misuse and Abuse"). These policy changes could help decrease the widespread use of opioids, but cannot remedy the amount of damage caused by opioids to the American public over the past 20 years.

Actor Network Theory and the Opioid Epidemic

To reduce the social stigma of the opioid epidemic for people who misuse opioids, society as a whole must develop an understanding of the association of the relevant stakeholders and focus on how these structural factors contributed to a widespread drug epidemic (Kennedy-Hendricks et al., 2017). The best way to find perspective of this topic is by the analysis of the opioid epidemic with the sociotechnical framework, Actor Network Theory (ANT). ANT creates social relations of power and organization as a network that affects one central idea (Law, 1992).

ANT characterizes how stakeholders congregate and reproduce a pattern of social networks (Law, 1992).

Actor Network Theory has been criticized by many as unreliable, unstable, and complex because it is used to interpret a network in many different ways (Cressman, 2009). When using ANT, the researcher can pick and choose which actors are relevant for their specific analysis. Each researcher could develop a different conclusion because of their use of different actors for the same central idea. ANT can be selective, but if researchers do not black-box certain actors the theory can be criticized to be an endless chain of relationships with a large number of actors (Müller, 2015). Actor Network Theory has also been criticized to solely focus on the sociological perspective without inclusion of the political critique (Alcadipani & Hassard, 2010). Hence, to reduce the complexity of analysis of the opioid epidemic, the black-boxing technique is used to more specifically focus on the network of pharmaceutical companies, physicians, pharmacists, and nurses.

Application of Network Analysis, Policy Analysis & Case Study of West Virginia

The rise in the opioid epidemic has many structural and socioeconomic factors that contributed to the outcome of a widespread national health crisis. Pharmaceutical companies increased manufacturing of opioids and heavy marketing of the opioids led to increased prescribing of them in the United States. Physicians overprescribing opioids due to incentives from pharmaceutical companies increased the abuse of opioids; which inherently led to an increase of drug overdoses. Pharmacists' lack of initiatives to address the problem of an increased number of opioids leaving their facilities due to physician prescription slips increased the number of opioids out on the street for abuse (Cochran, 2016). Nurses' lack of education for opioid mitigation due to unknown parameters of opioid overdose increase the amount of opioid

death rates, especially in the emergency response to these overdoses (Carlson, Wise, & Gilson, 2019). With the miscommunications of these structural factors in the healthcare system, the United States population was largely affected leading to many individuals misusing opioids and continuing to find ways to abuse opioid drugs even after prescribing rates decreased. Federal oversight agencies were at the forefront of the opioid epidemic allowing approval of opioids without understanding the full scope of the effect of these drugs. However, federal agencies were also pertinent for mitigating the problem once it began to largely affect the United States population in a horrific manner. All of these factors are exemplified in the case study of West Virginia, where it is seen that the state and its individuals were targeted by pharmaceutical companies because of the overall socioeconomic status and susceptibility at the beginning of the opioid epidemic (Monnat, 2019). The main pushing factors of the opioid epidemic are due to the structural failures and hierarchies in the healthcare system.

I. Network Analysis

A network analysis is conducted of the five relevant stakeholders to the opioid epidemic: pharmaceutical companies, physicians, nurses, pharmacists, and individuals who misuse opioids (Seen in *Figure 1*). The relationships between each stakeholder has largely affected how the opioid epidemic became a widespread national crisis. The medical structural factors and society itself have all played a significant role in the abuse of opioids. The understanding of each relationship and how it has affected the opioid epidemic is crucial to understanding how the structural factors in the healthcare industry have negatively affected the opioid epidemic.

The opioid epidemic began with the manufacturing of opioids by pharmaceutical companies and their relationship with physicians who they marketed to. Pharmaceutical companies in the United States focus on a “direct-to-physician” approach for marketing their

products (Hadland, Rivera-Aguirre, Marshall, & Cerdá, 2019). Around one in twelve physicians received opioid-related marketing from pharmaceutical companies between 2013 and 2015 (Hadland et al., 2019). Therefore, the increased marketing led to physicians' trust and likelihood to prescribe opioids to their patients. Physician prescribing rates continued to rise in the twenty-first century increasing from 72.4 to 81.2 prescriptions of opioids prescribed per 100 people from 2006 to 2010 in the United States (CDC Prescribing Practices, 2019). The relationship between the pharmaceutical industry and physicians led to the increased abuse of opioids and mortality rates due to overdoses in the United States (Hadland et al., 2019). The marketing of these opioids between pharmaceutical companies and physicians created a money driven system instead of a system focused on the well-being and health of individuals.

Pharmaceutical companies marketing lacked education for the uses and side effects of opioids. Both physicians and nurses were uneducated about the effects of opioids because there was no system to educate about the addictive qualities of the drug and how to recognize those warning signs. Physicians were not implementing safe prescribing methods because of the absence of programs to educate specifically on pain management and the suitable opioid prescription use (Hudspeth, 2019). Similarly, nurses lacked education on the mitigation efforts in individual State Boards of Nursing for the opioid epidemic (Carlson et al., 2019). While education started to develop in the State Boards of Nursing as of 2018, the information was still inconsistent and difficult to locate from state to state (Carlson et al., 2019). The lack of information involving the addictive side effects of opioids from the pharmaceutical industry to physicians and nurses, led to the unawareness of how opioids would affect public health of many people throughout the nation.

A lack of education and training was also a prevalent factor for pharmacists when addressing patients suspected of abusing opioids and physicians abusing their power of overprescribing opioids. Research has shown that pharmacists that felt uncomfortable or unqualified to communicate with patients about non-medical prescription opioids would be less likely to discuss misuse with patients (Cochran, 2016). The lack of confidence of pharmacists to discuss misuse is attributed to the lack of training for opioid specific mitigation methods and communication. To address the missing aspect in the pharmacy educational system, the American Pharmacists Association foundation created the Generation Rx program. This education program promotes public awareness of opioid misuse to increase awareness for pharmacists and student pharmacists (Cochran, 2016). Generation Rx provides pharmacists with tools and training to address substance abuse issues and specifically non-medical prescription opioids (Cochran, 2016). This training will help pharmacists communicate to patients and communicate with physicians when suspecting opioid misuse.

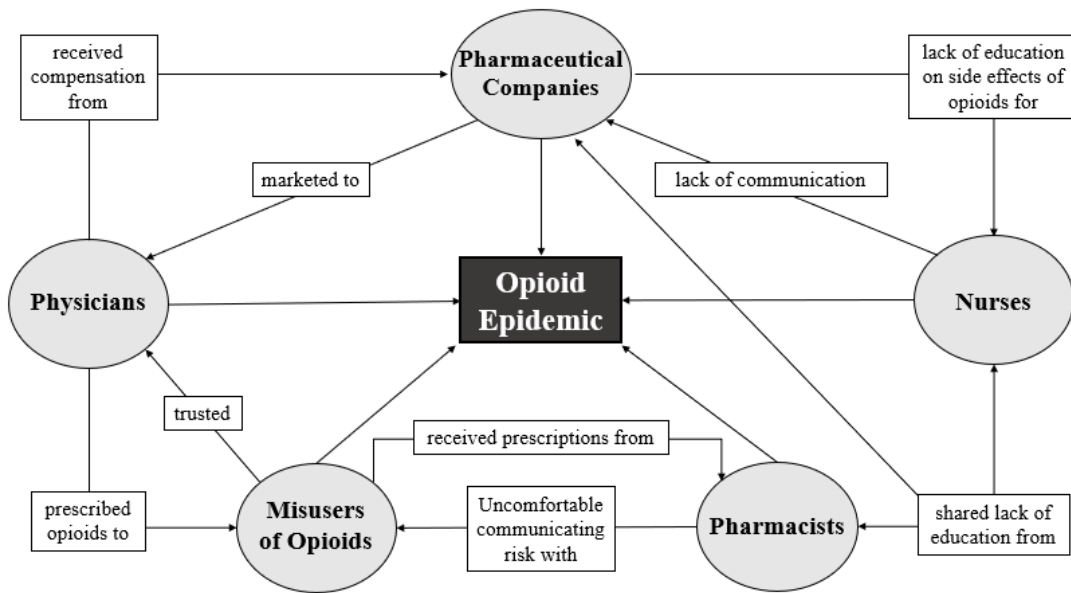


Figure 1. Actor Network Theory diagram of relevant stakeholders of the opioid epidemic using a network analysis

(Fuller, 2020).

II. Policy Analysis

The US Food and Drug Administration (FDA) has played a prominent role in opioid drug implementation and restrictions over the past thirty years. In 1995, the FDA approved OxyContin, which is one of the largest opioid drugs that contributed to the beginning of the opioid epidemic (Research, 2019). At the time, the FDA approved OxyContin with the understanding that it would have less abuse potential because of its controlled time release aspect that allowed dosage every 12 hours instead of 4 to 6 hours. In the beginning of the 2000s, there became a spike in drug overdoses especially due to opioids and more specifically OxyContin. Drug overdoses rose from 400,000 in 1999 to 2.8 million in 2003 (Research, 2019). The FDA had risk management programs for opioid products, but realized after the spike in overdoses they need to implement more restrictions and education about opioids. In 2001, the FDA came together with other associations such as SAMHSA, Center for Substance Abuse Treatment (CSAT), and National Institute on Drug Abuse (NIDA) to develop a plan to educate the public about prescription drug overdose. In 2003, the FDA issued Purdue Pharma, the manufacturer of OxyContin, a warning letter for deceptive advertisements that minimized the serious risks from the drug and encouraged use of the drug beyond what the FDA approved to be safe (Research, 2019). Backlash from the medical community and society caused Purdue Pharma to make a new formulation of OxyContin that was approved by the FDA in 2010. Although OxyContin was re-formulated to the new standards of the FDA, it was still at the center of the opioid epidemic. Therefore, the FDA held an advisory committee to implement a class-wide Risk Evaluation and Mitigation (REM) program that included OxyContin. In 2014, the FDA approved the drug naloxone for opioid overdose reversal to decrease the death rates due to opioid overdoses. By 2015, OxyContin had limited restrictions to what types of patients it could be prescribed to -

mostly for patients with severe pain that required daily, around-the-clock, long term pain relief (Research, 2019).

In 2016, the FDA realized that its approach to opioid medications needed to be reassessed. The FDA took action to attempt to reverse the opioid epidemic, but also still provide patients with the pain relief they need. In February of 2016, the FDA enacted eleven post marketing requirement studies to understand the risks of misuse, abuse, addiction, overdose, and death due to opioids. By March, the FDA held a meeting with the Science Board to discuss the challenges of the role as a federal agency to provide appropriate pain treatment, while also reducing the opioid epidemic. Following the convened meeting, the FDA required class-wide safety label changes to include additional information about the risk of opioid medications such as addiction, overdose, and death (Research, 2019).

The FDA is an important federal oversight agency that has played a role in the implementation and mitigation of the opioid epidemic, but there are many other federal agencies that help to mitigate the epidemic, including the Center for Disease Control and Prevention (CDC) and the Drug Enforcement Agency (DEA). The CDC released guidelines for prescribing opioids for chronic pain in 2016, which encouraged hospital systems to update current guidelines to follow the CDC's recommendations (Soelberg et al., 2017). The CDC has a limited amount of enforcement for opioids, but it encourages systems at the state level to educate prescribers, patients, and the public about the long-term harmful effects of opioid abuse. In the DEA, the Bureau of Narcotics and Dangerous Drugs focuses on the illegal use of opioids from pill mills, which refers to doctors, clinics, or pharmacists who are prescribing opioids inappropriately. The DEA is limited because of its lack of power over drug laws in the United States, but it focuses on

regulating and monitoring the distribution of opioids throughout the United States (Soelberg et al., 2017).

III. Case Study: West Virginia

The state of West Virginia is chosen as a specific case due to its high prescribing and mortality rates when compared to other states (CDC Drug Overdose Deaths, 2019). Purdue Pharma, the pharmaceutical company known for its manufacturing of Oxycontin, is considered responsible for high prescribing rates in West Virginia due to their advertising of opioids to physicians in economically small rural areas with many injured and jobless people on disability (Monnat, 2019). In 2000, West Virginia was one of a few states whose prescribing rates were five to six times the average for the entire nation (Monnat, 2019). Research has found that West Virginia's socioeconomic status is an important factor to why it was largely affected by the opioid epidemic. Overdose deaths continued to increase in West Virginia while nationally overdose deaths were declining. In 2017, West Virginia had 49.6 overdose deaths per 100,000 people which was more than three times the national average of 14.6 deaths per person (Abuse, 2019). In 2017, West Virginia physicians prescribed 81.2 opioid prescriptions per 100 people, while the national average was 58.7 per 100 (Abuse, 2019).

Limitations & Further Research

This paper focuses on a specific network surrounding the opioid epidemic, therefore conclusions made in the aforementioned research are specific to the network that is black boxed. In order to reduce complexity, a small number of stakeholders out of many that could be considered are focused on. This research mostly focuses on the healthcare industry surrounding the opioid epidemic, but there are many other aspects including more in depth societal and

economic factors. While some societal and economic factors were brought to light in the historical case study of West Virginia, a larger understanding of how these affected the opioid epidemic in the United States as a whole was not addressed in this paper. Some of the conclusions found in the West Virginia case study could translate to the United States, but without further research it is not translatable for the rest of the United States. Concentrating on the societal and economical influences of each state individually and the United States as a whole would be an interesting concept to further research. This would add substance and validity to the current state of this analysis of the opioid epidemic.

Conclusion

The opioid epidemic exposed society to the problematic policies in the pharmaceutical and healthcare industries. Problematic policies and miscommunication between medical sectors led to an overwhelming public health problem in the United States. The impact of the pharmaceutical industry's marketing techniques and lack of education on physicians and nurses significantly amplified the abuse of opioids in America. The widespread effect of the opioid epidemic encouraged negative connotations towards individuals who misused opioids. Although most were misconstrued about the consequences of opioids when they were first brought into the drug market. Differing medical sectors and their respective relationships were analyzed to demonstrate the structural failures that caused the opioid epidemic. The analysis of these structural factors helps to encourage preventative measures needed to avoid a similar event from recurring. This research reframes the issue of the opioid epidemic to emphasize the structural factors that led to it, instead of blaming the individuals who were affected by it.

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