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Assessing Factors That Increase the Likelihood of Naloxone Administration

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ASSESSING FACTORS THAT INCREASE THE LIKELIHOOD

OF NALOXONE ADMINISTRATION.

By Samantha Nagy

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DISSERTATION APPROVAL

This is to certify that the thesis presented to us by Samantha Nagy on the 28th day of

May 2020 in partial fulfillment of the requirements for the degree of Doctor of

Psychology, has been examined and is acceptable in both scholarship and literary quality.

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ABSTRACT

For more than two decades, the opioid epidemic has swept through the United States and has caused thousands of deaths every year due to opioid overdose. The Centers for Disease Control and Prevention (CDC; 2019) has reported that since 1999, over 770,000 Americans have died from overdoses. Nearly 70% of deaths in 2018 were due to opioids, 47% of which were the result of fentanyl or a non-methadone opioid and 22% were the result of heroin (CDC, 2019). As policy and treatment protocols attempt to manage those who seek treatment, the pharmaceutical industry has developed a life-saving medication that gives those who overdose another chance at recovery. Despite legislation allowing standing prescriptions and statewide access to naloxone, there continues to be some disconnect toward getting the layperson to be willing to intervene. The present study computed bivariate correlations and logistic regressions to identify factors that predict a person's likelihood of administering naloxone should he or she encounter a person who has overdosed. An online survey was completed by 129 college students of various demographics. Factors examined included concern of legal and civil ramification, empathy, stigma toward substance use, and personal attribution of addiction. Results indicated the strongest predictor to be empathy. These findings can be used to inform future research to further foster support for naloxone distribution and use.

CHAPTER 1: INTRODUCTION

Statement of the Problem

The opioid epidemic is a national health concern that plagues many Americans. The National Institute on Drug Abuse (NIDA; 2019) has estimated that 72,000 Americans died in 2017 from opioid overdoses. As the number of deaths due to overdose increases, policymakers and public health officials continue to find ways to mitigate this problem. In September 2016, the United States Attorney General issued a memorandum identifying a three-pillar strategy to combat the opioid epidemic. The primary pillar was prevention, which included prevention of overdose deaths through the utilization of naloxone. In recent years, there have been a variety of strategic efforts launched to help combat the opioid epidemic. As the efforts have increased to get naloxone into the hands of the public, it is important to identify factors that increase its utilization when one encounters someone who has overdosed.

Purpose of the Study

This study aimed to identify individual characteristics of a person that impact his or her likelihood of administering naloxone. The study accomplished this by presenting participants with a vignette in which they were presented an opportunity to administer naloxone and examining their decided courses of action, degree of empathy, stigma toward addiction, concern of legal/civil ramifications, and personal attributions of addiction.

The results of this study aimed to provide insight into the characteristics that may increase or reduce the likelihood of someone administering naloxone in the event of an opioid overdose. The study intended to provide useful information to guide future research and policy regarding more targeted and impactful naloxone training and distribution. The purpose of this study was to identify factors that may make people resistant to administering naloxone in the event they encounter someone who is experiencing an opioid overdose.

Research Questions and Hypotheses

Hypothesis 1. Participants with higher level of empathy were hypothesized to be significantly more likely to administer naloxone.

Hypothesis 1 rationale. Leading research notes empathy as an "other-person oriented emotion that evokes altruistic motivation to reduce other's needs" (Batson, Duncan, Ackerman, Buckley, & Birch, 1981). Both empathy and feelings of personal distress have been found to impact an individual's decision to perform helping behaviors (Batson et al., 1981). When feelings of personal distress outweigh empathy, helping behaviors are decreased (Carrera et al., 2012). It was hypothesized that when a person is trained in the proper administration of naloxone, his or her empathy would outweigh feelings of personal distress and facilitate the decision to perform helping behaviors by administering the naloxone.

Hypothesis 2. Participants with lower levels of stigma toward opioid users were hypothesized to be significantly more likely to administer naloxone.

Hypothesis 2 rationale. Research has suggested that fear of encountering social stigma is correlated with a decreased likelihood of calling 911 in the event of

encountering an overdose, despite Good Samaritan Laws in place (Latimore & Bergstein, 2017). Examining whether this factor extends to the decision to administer naloxone was intended to provide insight into how the decision to intervene is made.

Hypothesis 3. Participants with a lower level of concern regarding legal/civil ramifications were hypothesized to be significantly more likely to administer naloxone.

Hypothesis 3 rationale. Research indicates that despite establishment and education around Good Samaritan Laws, people are still hesitant to involve law enforcement if they encounter individuals who have overdosed (Koester, Mueller, Raville, Langegger, & Binswanger, 2017). It is important to establish the degree that legal or civil concerns may impede naloxone administration for future research to examine how the public can come to accept and trust the immunity granted by Good Samaritan Laws.

Hypothesis 4. Participants with a significantly lower degree of negative attribution toward those who use opioids were hypothesized to be more likely to administer naloxone.

Hypothesis 4 rationale. Research demonstrates a continued lack of understanding regarding the conceptualization of addiction as a disease, as well as support of the idea that habitual drug use is the result of free will (Vonasch, Clark, Lau, Vohs, & Baumeister, 2017). Research is unclear about whether those who believe drug use is due to a moral failing and a result of free would support overdose reversal efforts. Research can definitively state that majority of Americans in today's society support some efforts toward combating the opioid epidemic (Barry et al., 2016). It was hypothesized that those who have a low degree of negative attribution, or belief that the

individual's drug use is outside the scope of free will, would choose to administer

naloxone. This hypothesis was formulated on the assumption that those who have a

negative attribution toward those using drugs do so because they believe those with

substance use disorders are using solely because of their own poor decisions.

CHAPTER 2: REVIEW OF THE LITERATURE

People have found ways to use substances to alter their stages of consciousness since the beginning of time. Psychoactive drug use can be traced back to the prehistoric period of 8500-4000 B.C. when humans utilized plants and fruits for their psychoactive properties (Inaba & Cohen, 2007). The most popular mind- and mood-altering substances have stayed consistent for centuries, including tobacco leaves, the cannabis plant, team leaves, coca leaves, fruits that ferment into alcohol, and opium poppies (Austin, 1979).

There has been evidence of opium use in ancient Greece, Spain, Egypt, and Mesopotamia (Escohotado, 1999). Early Mesopotamians used opium for its medicinal and psychological properties. It is believed that the plant was used for pain relief, cough suppression, euphoria, and sedation (Hoffman, 1990). Historical evidence for substance use demonstrates the human tendency to use mind-altering materials to achieve physical or psychological effects. The propensity to alter the state of mind lays the foundation for the substance use seen in current society, specifically the opioid epidemic. Smoking opium is a practice that dates to the year 1500, when Portuguese traders introduced the practice to the Chinese people (Inaba & Cohen, 2007). Many years later, Chinese immigrants brought smoking opium to the United States, introducing opium dens to the west coast (Kuhn, Swartzwelder, & Wilson, 2003).

Opioids are a class of drug that includes both natural (opiates) and synthetic (opioid) substances that act on the brain's opioid receptors. The term *opioid* is used to encompass natural, synthetic, and semi-synthetic forms of the substance. The opioid class of drugs includes common "street" drugs, such as heroin, in addition to medications

such as morphine, fentanyl, hydrocodone, and oxycodone. The effects of opioids include

pain relief, analgesic properties, sedation, euphoria, reduced heart rate, and depressed

breathing. There have been four opioid receptors identified in the human brain: MOP (μ

= mu), KOP (κ = kappa), DOP (δ = delta), and NOP-R (Waldhoer, Bartlett, & Whistler,

2004). These receptors are naturally occurring and well distributed throughout the body

to accommodate the body's endogenous pain-relieving processes. When an opioid is

introduced into the body by way of any route of administration that allows it to cross the

blood-brain barrier, it binds to one of the four receptors and produces the effects. An

opioid overdose occurs when an abundance of the substance is introduced into the body

producing toxic effects. NIDA and the CDC concentrate the discussion of the opioid

epidemic to prescription opioid use, heroin, and the recent development of fentanyl use.

Scope of the Opioid Epidemic

The National Survey on Drug Use and Health estimated that in 2017, 3.1% of

individuals between the ages of 12 and 17, 7.2 % of those ages 18 to 25, and 3.7% of

individuals 26 or older were prescribed opioids for pain relief (Center for Behavioral

Health Statistics and Quality, 2017). NIDA (2019) has identified that prescription

opioids have a high potential for abuse and modes of misuse include taking the

medication at a different dosage or route of administration than prescribed, taking opioids

prescribed to another person, or taking the medication for the purpose of an obtaining

altered mind or mood. Commonly prescribed opioids for severe pain include

hydrocodone (Vicodin), oxycodone (OxyContin, Percocet), oxymorphone (Opana),

morphine, codeine, and fentanyl. In 2010, the CDC reported that 81.2 per 100 Americans

were given prescription opioids for pain. Despite efforts to combat the epidemic, in 2017

there were 58 opioid prescriptions written for every 100 Americans and more than 17%

of Americans had at least one opioid prescription filled (CDC, 2018). Despite the

decrease in percentage of opioid prescriptions written from 2010 to 2017, 58 per 100

Americans equates to 191 million opioid prescriptions in one year alone. It has been

found that as many as 80% of Americans who reported using heroin identified that their

use began with prescription opioids (Muhuri, Gfroerer, & Davies, 2013).

Approximately 2.2% of adults over the age of 26 reported use of heroin within

their lifetimes according to the 2018 National Survey on Drug Use and Health. The same

survey reported 1.8% of those in the 18 to 25 age bracket had used heroin. The

prevalence of heroin use among Americans has been growing since 2007 (Center for

Behavioral Health Statistics and Quality, 2017). Heroin can be used via many routes of

administration, including snorted, injected, or smoked. As previously identified, heroin is

commonly, but not always, the result of progressive substance use (Muhuri et al., 2013).

Illicit fentanyl use continues to gain attention in the discussion of the opioid

epidemic. Fentanyl is a synthetic opioid 50 to 100 times more potent than morphine and

is typically used to manage pain for patients after surgery (NIDA, 2016). In recent years,

the number of overdose deaths attributed to synthetic opioids, identified by the CDC as

being predominantly fentanyl, has grown exponentially. Provisional data for the year

2017 report 29,406 deaths attributable to this classification of opioids. This is a 10,000

increase from the 19,413 reported in 2016, and a 20,000 increase from the approximately

10,000 deaths reported in 2015 (CDC, 2018). Fentanyl can be particularly dangerous due

to its high potency and ability to be mixed into other substances without the user's

knowledge.

Opioid-dependent patients are more likely to have HIV, hepatitis C, lower back pain, posttraumatic stress disorder, psychotic symptoms, and diagnoses of alcohol, cocaine, or amphetamine use disorders (Barnett, 2009). An increase in likelihood of other medical conditions results in increased health care costs for this population of Americans. It has been established that high-risk prescription opioid users have higher health care costs and utilization records than non-users (Chang, Kharrazi, Bodycombe, Weiner, & Alexander, 2018). A "value of statistical life" analytic method estimated the true cost to society is $504 billion dollars, including work-productivity, earnings, and raising families (Ryan, 2018). According to a 2016 analysis of the 2013 calendar year, the economic burden of the opioid epidemic is $78.5 billion (Florence, Zhou, Luo & Xu, 2016). Florence and colleagues (2016) identified over $28 billion of this sum was accounted for by health care and substance abuse treatment and $7.7 billion was attributable to criminal justice-related costs. It can be assumed that these numbers will continue to grow with the growing number of opioid users.

In 2013, the Office of National Drug Control Policy (ONDCP) released a joint statement with the Substance Abuse and Mental Health Services Association (SAMHSA) regarding an "Opioid Toolkit," which promoted the use of naloxone outside of medical settings (ONDCP & SAMHSA, 2013). These agencies advocated for law enforcement officers and laypersons to possess and carry naloxone to assist in the event of overdoses. Despite the recommendation for law enforcement officers to be trained and equipped with naloxone, some reports have demonstrated the rate of implementation remains low (Dudzik, 2017). The Surgeon General has extended the recommendation to include opioid users' loved ones to have naloxone in their homes (U.S. Surgeon General, 2018).

Treatment Approaches

The need for substance use treatment has been present since humans began using mind- and mood-altering substances. Just as ancient records indicate that people used various substances for mind-altering experiences, records also indicate the historical need for treatment. Ancient Egyptians recorded those with alcoholism being sanctioned to private homes, and the Ancient Romans and Greeks recorded treating substance use with asylums (White, 1998). Since ancient times, treatment has continued to evolve. The evolution of treatment can be broken down into treatment based on the moral model, the 12-Step approach, and medication-assisted treatment.

Moral model. The initial stages of treatment in America can be traced back to the practices of incarceration. Those labeled "drunkards" were typically placed in jail for their behaviors (Rosenberg, 1995). Societal practices of incarceration as a result of misusing alcohol was somewhat counterintuitive given records of alcohol being provided to inmates in prisons (Rothman, 2001). This practice demonstrated the lack of knowledge regarding a logical explanation for the behaviors of those misusing substances. The passing of the Harrison Narcotics Tax Act in 1914 reinforced this belief by heavily regulating opium and coca products (Inaba & Cohen, 2007). Prior to the passing of this law, opium and coca products were widely used to treat morphine and alcohol addiction (Henniger & Sung, 2014). Regulating these practices contributed to the moral model by implying that addiction should be criminalized due to the illegalization of the substances used to treat addiction-related behaviors. The American Association for the Cure of Inebriation was the first organization to attempt to transition the treatment of addiction to a professional service when proponents advocated that addiction should be

treated as a disease rather than a criminal act that should be punished (Henniger & Sung, 2014).

   Mutual assistance programs. Although mutual assistance programs, such as Alcoholics Anonymous (AA), Narcotics Anonymous, and other 12-step programs, are not widely considered to be evidenced-based interventions, they are often used as ancillary services within other treatment programs. These 12-step programs were not the first self-help groups in America, but they have a strong presence in the development of recovery from substance use. AA began after prohibition led to the disappearance of many formal modalities of treatment (White, 1998). The Big Book of Alcoholics Anonymous states, "half measures have availed us nothing," encouraging those looking for sobriety to follow the 12 steps to make a complete lifestyle change incorporating spiritual principles (AA, 2014). The 12 steps encourage newcomers to adhere to the guidance of sponsors, those who have had success with the steps in their own recovery journeys, to make the lifestyle changes necessary to combat the disease of addiction and abstain from drug use. The Big Book refers to alcohol and other drug addictions as an allergy, noting those who are addicted cannot tolerate the effects without developing a dependence, like the "non-addict" (AA, 2014).

   Medication-assisted treatment. Medication-assisted treatment (MAT) is used to define any modality of treatment that combines pharmaceutical intervention within a holistic treatment plan developed for a patient's substance dependence (SAMHSA, 2020). SAMHSA (2020) has advised that FDA-approved medications should be initiated and monitored by trained physicians in combination with other evidenced-based practices for substance use.

The historical roots of MAT in the United States can be traced to the 1800s when cocaine was utilized to treat alcoholism and morphine addiction (White, 1998). In China, morphine (an opiate) was used to treat opium addiction, and in Europe, heroin was developed to treat morphine addiction (Inaba & Cohen, 2007). Despite the development of this treatment approach, MAT is not currently used as a replacement for the original substance but, rather, to adequately manage both acute and protracted withdrawal symptoms and cravings to allow the individual to fully participate in the necessary therapy (SAMHSA, 2020).

Currently, there are three FDA approved medications that are used for the treatment of opioid use disorder (OUD). These include methadone, a synthetic opioid receptor agonist, buprenorphine-naloxone (sold under the brand names Suboxone and Subutex) which acts as a partial agonist, and naltrexone (sold under the brand name Vivitrol) which acts as a full opioid antagonist. Naltrexone can be given via a daily oral pill or a once monthly intramuscular injection (NIDA, 2019). The availability of MAT has been found to decrease illicit opioid use, criminal activity, and the transmission of infectious disease (Mattick, 2014; Mattick, Breen, Kimber, & Davoli., 2009; Schwartz et. al., 2013).

Research has shown that MAT is most effective when combined with psychosocial intervention. It has been demonstrated that methadone maintenance and cognitive behavioral therapy are effective; however, little research has been done on other types of MAT and modalities of therapy (Dugosh et al., 2016).

Overdose Reversal

Despite many interventions and treatment modalities that have been used with varying degrees of success, most recent research indicates that more than 72,000 overdose deaths due to opioid use occurred in 2017 (NIDA, 2019). Naloxone (sold commonly under the brand name Narcan) was developed to reverse an occurrence of an opioid overdose and can be used to save a life during an emergent situation.

Naloxone is an opioid antagonist that binds to the brain's opioid receptors and reverses the physical effects of an overdose. When the physical effects of an overdose are reversed, the person immediately experiences symptoms of opioid withdrawal. This reversal will restore normal breathing and other bodily functions and can be used with all drugs within the opioid class (NIDA, 2019). If naloxone is given to an individual who does not have opioids in his or her system, there will be no effect. Naloxone is a short-acting medication that wears off in 20 to 90 minutes (harmreduction.org, 2020). Because of the short-acting nature, it is important to get the individual to an emergency department after being given any amount of naloxone because he or she may need additional doses after the initial dose wears off (NIDA, 2019).

NIDA (2019) identified three possible administrations of naloxone: injectable, auto-injectable, and nasal spray. The Food and Drug Administration (FDA) requires the injectable form to be administered by trained medical professionals, whereas it recommends the auto-injectable and nasal spray for laypeople with appropriate training (FDA, 2016).

Naloxone is becoming more widely distributed among first responders and the public. Permissions for the overdose reversal are dependent on state laws; however,

states are passing legislation to provide the drug to the public. Legislation is supported

by the recommendation by the ONDCP for any member of the public to be trained and

obtain naloxone if a loved one or family member is at risk for an opioid overdose

(ONDCP & SAMHSA, 2013). Standing orders are being established in most states in the

U.S. to make naloxone more available to the public. A standing order is legislation that

allows a licensed physician to designate a trained layperson as outlined above to obtain

naloxone (University of Maryland, 2016). This allows the public to access naloxone

without facetime with the physician. A statewide standing order, such as the model used

in Pennsylvania, allows the public to access naloxone "from a pharmacy in the event they

are unable to obtain naloxone or a prescription for naloxone from their regular health care

provider" (Pennsylvania Department of Health, 2018). Forty-two states and the District

of Columbia have statewide standing orders (Kokosky, 2018). According to SAMHSA,

every state in the U.S., excluding Nebraska, have models of non-patient-specific

practices, such as standing orders or third-party prescribing privileges (SAHMSA, 2018).

Recent research has demonstrated that education regarding the use and

availability of naloxone within treatment settings is helpful in its distribution to substance

users. Psychoeducation regarding the distribution and use of naloxone increases

knowledge of proper procedure in the event of an opioid overdose (Lott & Rhodes,

2006). Some individuals identified naloxone to be "just as important as a clean needle"

to their using rituals and some individuals demonstrated very low knowledge of the

availability of the lifesaving drug (Heavey et al., 2018). Resistance toward carrying

naloxone by individuals using opioids varies from the size of the kit to reporting no

longer being around other people who are using drugs (Khatiwoda, R. Proeschold-Bell, Meade, Park, & S. Proeschold-Bell, 2018).

Possible Barriers to Naloxone Administration

Although it continues to be distributed more broadly and more individuals are being trained on administration, many individuals continue to experience resistance to obtaining and utilizing naloxone if encountering overdoses. In addition to bystander hesitancy, medical professionals have their own hesitancy toward prescribing naloxone to substance using individuals. Hesitancies have been found to include concerns of lack of knowledge, third-party education, fear of enabling drug use, and stigma against those who use opioids (Gatewood, Van Wert, Andrada, & Surkan, 2016). It is important to consider providers' apprehensions toward prescribing naloxone as these practices are likely to trickle down to public consumers.

Knowledge and attitudes. Despite better training and distribution efforts, many people are unaware of naloxone and have yet to be trained. A lack of knowledge can make efforts to combat the epidemic futile by allowing stigma and misperceptions to continue. People continue to view addiction as a loss of free will (Vonasch et al., 2017). This view can undermine the recovery efforts of those using drugs, as well as the efforts of those in the field of treating addicted individuals.

Just as the presence of stigma and lack of knowledge can deter efforts to combat the epidemic, support of the cause can increase efforts. A majority of Americans recognize the severity of the opioid epidemic and support the efforts to address this national problem (Barry et al., 2016). It is imperative this support is harnessed with appropriate knowledge to include the general population in the efforts to spread recovery.

Having the support of the general population is essential to progressing to the

involvement of the public in efforts to combat the epidemic.

Concern of legal ramifications. As evidence demonstrates a lack of

understanding of substance use, it is possible there is a lack of knowledge surrounding

the legal ramifications of administering naloxone. If a lack of knowledge is present, it is

possible an individual may have a fear of legal implication if he or she becomes involved

in a situation relating to an opioid overdose. It is possible this fear begins with hesitation

by physicians in prescribing naloxone. Research continues to demonstrate physician

apprehension for fear of legal ramifications despite minimal risk (Burris, Norland, &

Edlin, 2001; Davis, Carr, Southwell, & Beletsky, 2015). If the people are concerned

about legal action in response to administering naloxone, they may continue to be

hesitant to utilize the drug despite training and availability. For instance, an individual

may be concerned about his or her own legal implications due to the presence of

paraphernalia on the scene of an overdose.

Many states have established Good Samaritan Laws to assist with this fear. The

National Conference of State Legislatures (2017) reported that 40 states and Washington

D.C. have some form of a Good Samaritan Law that protects those who call emergency

medical professionals for overdoses. Research has shown that fear of repercussions

persists despite the presence and knowledge of Good Samaritan Laws in the instances of

drug overdoses (Koester et al., 2017).

Empathy and stigma. In the presence of available naloxone, appropriate

training, and adequate knowledge regarding drug use and applicable legislation, a person

encountering an individual who has overdosed needs to make a decision about whether to

intervene. It is possible this decision is made based on the person's level of empathy.

The presence of stigma toward drug using individuals may cause a lack of empathy

toward this population and may deter an individual from intervening.

A lack of empathy and feelings of futility have been demonstrated in first

responder populations when intervening in recurrent cases of drug overdoses (Green et

al., 2013). It is possible this phenomenon permeates the public as well. If an individual

experiences a lack of empathy and feelings of futility toward efforts to combat the opioid

epidemic, he or she may not have motivation to get training or to carry naloxone,

ultimately preventing him or her from intervening in an instance of overdose.

Research demonstrates that increased empathy toward a member of a stigmatized

group ultimately increases the empathy toward the group (Batson, Polycarpou, et al.,

1997). If it is identified that empathy is a contributing factor to a person's decision to

administer naloxone, it would be imperative to help decrease stigma and raise the levels

of empathy for this population.

Given this data, the present study aimed to identify factors that impact an

individual's decision to administer naloxone upon encountering a person who is

experiencing an opioid overdose.

CHAPTER 3: METHOD

The purpose of this study was to identify factors that may make people resistant to administering naloxone in the event they encounter someone who has overdosed. Participants were asked to complete a demographic questionnaire, analyze a vignette, and complete three measures. A within-group, correlational design was used in this study. The results of this study were interpreted using a logistic regression.

Participants

The participants in this study were students in undergraduate universities and trade/technical schools (N = 130). Participants were recruited for this study through a sample of convenience using an online student listserv. The students were not compensated for their participation; however, all participants were entered in a drawing to win one of four $25.00 Amazon gift cards.

Inclusion and exclusion criteria. Individuals were permitted to participate in this study if they were 18 years of age and older, students in undergraduate or technical/trade schools, had access to computers, and were willing to participate in the survey. Individuals were excluded from this study if they were under 18 years of age, had a non-student status, and were unwilling to participate in the study. Naloxone training was used as a hypothetical in the vignette; therefore, training was not a requirement to participate in the study.

Measures

Six instruments were used in this online inquiry: (a) demographic and personal history questionnaire, (b) vignette, (c) Toronto Empathy Questionnaire, (d) Affect Scale

for Substance Users, (e) Likert-type scale regarding concern of legal/civil ramifications, and (f) Modified Attributions of Obesity Scale (AOAS).

Demographic and personal history questionnaire. Participants were given a demographic questionnaire developed by the researcher. Demographic information collected by this questionnaire included gender, age, ethnicity, socioeconomic status, exposure to substance use disorders, and whether the participant has had a loved one revived with naloxone.

Vignette. Participants were asked to read a vignette detailing an experience in which they encountered someone who was demonstrating symptoms of an opioid overdose. The vignette informed the participant that he or she has been trained in the use of naloxone and has it available to him or her at the time he or she encounters the individual who has overdosed. After the vignette, the participant was asked to indicate his or her next actions in the scenario. Potential answers included "administer naloxone," "ask someone else to administer the naloxone," "call 911," "ensure a witness calls 911," or "not get involved." After indicating his or her next course of action, the participant was asked to rate his or her confidence that this choice would match his or her actions should this situation be encountered outside of an imaginal circumstance.

Toronto Empathy Questionnaire. The third measure used in this study was the Toronto Empathy Questionnaire (TEQ; Spreng, McKinnon, Mar, & Levine, 2009). This is a self-report measure that measures attributes associated with empathy. Items 1 and 4 measure the perception an individual has of the emotional state of another person. Item 8 assesses emotion comprehension in others. Items 2, 7, 10, 12 ,and 15 measure emotional states in others by indexing the frequency of behaviors. Items 3, 6, 9, and 11 gauge

physiological arousal. Items 5, 14, and 16 measure altruism. Item 13 is indicative of higher-order empathy, such as prosocial behavior (Spreng et al., 2009).

The TEQ is a series of 16 statements in which participants are asked to rate how frequently they feel or act as the statement describes. The TEQ is scored using the following rating: Never = 0, Rarely = 1, Sometimes = 2, Often = 3, Always = 4. The higher the score, the more empathy the participant demonstrates (Spreng et al., 2009).

The TEQ correlated positively with the Empathy Quotient, $r = .80$, $p < .01$ and negatively with the Autism Quotient, $r = -.33$, $p < .01$ (Spreng et al., 2009). The TEQ demonstrated internal consistency of $\alpha = .87$ and high test-retest reliability, $r = .81$, $p < .001$ (Spreng et al., 2009).

Affect Scale for Substance Users. The Affect Scale for Substance Users (AS-SU) is a scale designed to measure the amount of stigma the participant has toward someone using mind- and mood-altering substances (Brown, 2011). Brown (2011) found the internal consistency for this measure to be $\alpha = .92$. This measure was originally adapted from three measures of mental illness stigma, the Social Distance Scale, the Dangerousness Scale (Link, Cullen, Frank, & Wozniak, 1987), and the Affect Scale (Penn et al., 1994). The AS-SU measures the level of stigma a participant has for an addicted person by inquiring about factors such as his or her comfort with interacting with someone with a substance use disorder, perception of his or her personality, and types of emotions toward an addicted person. The author advised that in subsequent research, the phrase "substance use disorder" should be substituted with the specific substance of interest due to research indicating that stigma can vary based on substance

(Brown, 2011). Because of this, "substance use disorder" was changed to "opioid use disorder" for the purpose of this study.

   Likert-scale regarding civil and legal concerns. Two items were measured using a Likert-like scale. In the first item, participants were asked to rate their concern regarding legal action in retaliation for using naloxone. In the second item, participants were asked to rate the same level of concern; however, they were asked to identify their level of concern with civil action.

   Modified Attributions of Obesity Scale. The Attributions of Obesity Scale (Foster et al., 2003) was developed to assess physicians' attitudes toward obese patients. This measure consists of multiple sections inquiring about physician characteristics and viewpoints in working with obese patients. The sections of this measure examine physicians' characteristics (heights and weight, type of practice, income level of typical patient) and case conceptualization questions regarding patients with the presenting problem of obesity. The final two sections of this assessment ask the physician about his or her attributions of obesity and characteristics he or she attributes to obese patients. These final two sections were adapted for this study, to form the Attributions of Addiction Scale (AOAS).

   In the first adapted section, participants were asked to provide a Likert-rating of 1 (Strongly Disagree) to 5 (Strongly Disagree) to measure how much their beliefs are in accordance with each statement. The wording of these items were changed from "obese patients" to "addicted persons." The following items were eliminated due to the inability to be adapted from physician rating to layperson and/or from obesity to addiction: "I make accommodations for obese patients by providing big thigh cuffs, large hospital

gowns, and armless chairs," "I am usually unsuccessful in helping obese patients lose

weight," "I would spend more time working on weight management issues with patient if

my time was reimbursed appropriately," "A 10% reduction in body weight is sufficient to

improve of control obesity-related health complications," and "Physicians should be role

models by maintaining normal weight."

The second adapted section asked the participant to rate their beliefs about

characteristics of obese patients on a 7-point Likert scale. The items consist of 15 pairs

of opposite adjectives (e.g., bad/good, compliant/noncompliant, weak-willed/strong-

willed). The directions for this section inform the participant the adjectives are

commonly used to describe "obese patients." The wording of these instructions was

adapted to state the adjectives are used to describe "addicted persons."

Procedure

Prior to dissemination, IRB approval was obtained at Philadelphia College of

Osteopathic Medicine (PCOM). A document containing the information regarding the

study and raffle, the demographic questionnaire, the vignette, the TEQ, the AS-SU, the

Likert-items regarding civil and legal concern, and the Modified Attributions of Obesity

Scale (Attributions of Addiction) were created. The information were uploaded to

Research Electronic Data Capture (REDCap) with consideration for order effect of the

included measures. Undergraduate students were recruited via social media groups for

college students, where posts were created to inquire about their interest to participate in

this study. The inquiry included the REDCap link. When interested students clicked the

link, they saw a page that thanked them for their participation and a detailed description

of the study and what they were being asked to do. Participants were informed about the

benefits of the study, which include assisting to further research concerning naloxone

administration for those who have overdosed, the personal experience of participating in

a research study, and being entered into a drawing for an Amazon gift card. They were

informed the potential risks of participating in the study, including costing 15 to 20

minutes of their time and potential discomfort from the questions and exposure to the

scenario. This disclosure concluded by again thanking them for their participation in the

study and by asking them to answer all questions to the best of their ability. The

conclusion of the disclosure also reminded participants that their participation in this

study remained completely anonymous, and that it was voluntary and could be exited at

any time. Upon completion of data collection via REDCap, the researcher analyzed the

data using SPSS.

CHAPTER 4: RESULTS

A logistic regression was used to examine the relationship of the hypothesized predictor variables on the dichotomous criterion variable of administering or not administering naloxone in the vignette. A logistic regression of a binary response variable (Y) on a continuous, normally distributed variable (X) with a sample size of 120 completed surveys achieves 80% power at a 0.05 significance level.

All information was collected via REDCap and entered into SPSS for analysis. Descriptive statistics were used to assess the age of the participants, annual household income, concern of legal and civil ramifications, and total scores on the TEQ, AS-SU and AOAS. A Pearson correlation was used to assess the relationship between the decision to administer naloxone and participant predictor variables including sex, age, race, whether the participant had or knew someone with a substance abuse problem, whether the participant was aware of anyone who ever needed to be given naloxone, whether he or she was naloxone trained, whether those trained carried naloxone on a regular basis, area of study, annual household income, concern over legal ramifications, concern over civil ramifications, total TEQ score, total AS-SU score, and total AOAS score.

Participant responses were dichotomized into either administer or not administer naloxone for the purposes of the logistic regression. The participants who chose any other action (call 911, have someone else administer naloxone, etc.) were categorized into the "not administer" group. The logistic regression was used to examine whether the independent variables could be used to predict the criterion variable. The data were entered in a nonspecific order, using the SPSS "enter" function, and did not use a step-wise data entry, as the variables were all thought to be of equal importance.

Sample Demographics

A total of 129 participants met all inclusion criteria and completed the full survey and, therefore, were included in the analysis for the present study. Of these participants, 32 (24.8%) were male and 97 (75.2%) were female. Participants' ages ranged from 18 to 65 with an mean of 23.80 (SD = 7.33; see Table 1). Of the 129 participants, 115 (89.1%) were Caucasian, 2 (1.6%) were African American, 5 (3.9%) were Hispanic, and 7 (5.5%) described themselves as either Asian or Other. Area of study was included in the demographic information collected. The sample consisted of 22 (17.1%) nursing/biology students, 30 (23.3%) psychology/human studies students, 21 (16.3%) business/management/mathematics students, 5 (3.9%) trade/technical school students, and 35 (27.1%) "other" students. Sixteen (12.4%) participants chose not to disclose their areas of study. Annual household income ranged from $6,000.00 to $600,000.00 with a mean income of $80,269.61.

Only 117 (90%) respondents chose to provide information regarding their experiences with naloxone. Of those who chose to provide this information (117), 62 (53.0%) reported either themselves, family members, or friends who have had problems with substance abuse, 55 (47.0%) reported they, family members, or friends did not experience problems with substance abuse, and 12 participants chose not to answer this question. The same number of participants, 117 (90%), chose to disclose whether they have had personal experience with needing naloxone. Of the 117 respondents, 98 (83.8%) said they, family members, or friends have not needed naloxone, whereas 19 (16.2%) reported either they, family members, or friends have been administered naloxone. Finally, of the 117 participants who provided information regarding their

experiences with naloxone, 101 (86.3%) participants reported that they have not been

trained in the proper administration of naloxone, and 16 (13.7%) reported they have had

the recommended training in proper administration. Of these 16 (13.7%) trained

participants, only 2 (1.8%) respondents reported they carry naloxone with them regularly.

Table 1

Sample Demographics

Variable	N (%) or *M (SD)*
Gender	
Male	32 (24.8%)
Female	97 (75.2%)
Age (years)	23.80 (7.33)
Ethnicity	
White	115 (89.1%)
African American	2 (1.6%)
Hispanic	5 (3.9%)
Other	7 (5.5%)
Area of Study	
Nursing/ Biology	22 (17.1%)
Psychology/Human Services	30 (23.3%)
Business/Management/Mathematics	21 (16.3%)
Trade/Technical	5 (3.9%)
Other	35 (27.1%)
Did Not Disclose	16 (12.4%)
Annual Household Income	$80,269.61 (80,264.90)
Experienced Problems with Substance Abuse	
Yes	
No	62 (53.0%)
	55 (47.0%)
Aware of the Purpose of Naloxone	
Yes	
No	77 (66.4%)
	39 (33.6%)
Needed Naloxone	
Yes	
No	19 (16.2%)
	98 (83.8%)
Been Trained in The Proper Administration of Naloxone	
Yes	
No	16 (13.7%)
	101 (86.3%)
If Yes, Carry it with You	
Yes	2 (1.8%)
No	24 (21.4%)
N/A	86 (76.8%)

Bivariate Correlations

To analyze a potential relationship between variables, bivariate correlations were computed for the 11 predictor variables (sex, age, race, problems with substance abuse, awareness of purpose of naloxone, history of needing naloxone, being naloxone trained, carrying naloxone if trained, TEQ score, AS-SU score, and AOAS score) and the dichotomized criterion variable (administering naloxone [Y/N]). These analyses assisted in determining whether any of the predictor variables were not correlated with the criterion variables and, therefore, needed to be excluded from the regression. Additionally, this analysis served to find any instances of multicollinearity. Table 2 depicts significant associations that were identified between predictor and criterion variables.

Significant associations were found between some of the predictors and the criterion variable, administering naloxone: TEQ score ($R = .203$, $p > 0.05$), AS-SU score ($R = -.190$, $p > 0.05$), and AOAS score ($R = .208$, $p > 0.05$). There were statistically significant correlations between predictor variables, but these correlations were not strong enough to signal multicollinearity; therefore, the logistic regression was run without eliminating variables.

Table 2

Bivariate Correlation Matrix of Predictors and Criterion Variable: Decision to Administer Naloxone

	Administer Naloxone	Sex	Age	Race	SA Problems	Aware of Purpose	Needed Naloxone	Naloxone Trained	If Yes, Carry With	Area of Study	Family Income	Legal Concern	Civil Concern	TEQ	ASSU	AOAS
Administer Naloxone	1															
Sex	-.122	1														
Age	.054	-.009	1													
Race	-.017	-.062	-.063	1												
SA Problems	.039	.034	.242**	.027	1											
Aware of Purpose	.104	-.018	.293**	-.098	.214*	1										
Needed Naloxone	.136	-.025	.338**	-.145	.322**	.315**	1									
Naloxone Trained	.026	-.127	.159	-.108	.076	.285**	.162	1								
If Yes, Carry With	-.038	.087	-.720	.054	-.038	-.175	-.164	-.648**	1							
Area of Study	.081	.033	.287**	-.030	.055	-.256*	.042	-.246**	.003	1						
Family Income	.130	-.040	-.114	-.148	.020	.083	-.035	-.101	.150	.096	1					
Legal Concern	-.092	.145	-.133	-.036	-.058	-.100	-.060	.018	-.038	.001	-.129	1				
Civil Concern	-.142	.105	-.152	.050	.007	-.049	-.094	-.062	.037	-.102	-.082	.723**	1			
TEQ	.203*	-.111	.058	.085	.170	.013	.003	.067	.030	.023	-.075	.051	.083	1		
ASSU	-.190*	.124	-.140	-.120	-.106	-.206*	-.328**	-.190*	.046	.034	.013	.280**	.232**	-.066	1	
AOAS	.208*	.167	.054	.043	-.003	-.067	.084	.119	.021	.046	.115	-.122	-.139	-.048	-.381**	1

Note: ** Correlation is significant at the 0.01 level (2-tailed)
　　　 * Correlation is significant at the 0.05 level (2-tailed)

Logistic Regression

Prior to the analysis, assumptions associated with regression including normality, linearity, homoscedasticity, and multicollinearity were evaluated. The normality assumption was evaluated using the Shapiro-Wilks test and histograms. A plot of standardized residuals versus predicted values was used to determine homoscedasticity. Multicollinearity was tested by examining bivariate correlations between all independent variables. If any two variables were found to be highly correlated, a decision would have been made regarding which one to drop from the regression model.

An exploratory analysis included the percentage of each response to provide information about the proportion of participants who would (a) administer naloxone, (b)

ask someone else to administer the naloxone, (c) call 911, (d) ensure another witness calls

911, or (d) not get involved.

A binomial logistic regression was performed to ascertain the predictive nature of

empathy, stigma toward substance users and personal attributions toward substance use

on the likelihood that participants would choose to administer naloxone in the event they

encountered someone experiencing an overdose. Linearity of the continuous variables

with respect to the logit of the criterion variable was assessed via the Box-Tidwell

procedure. The logistic regression model was statistically significant, $\chi^2(3) = 13.595, p <$

.004. The model explained 14.0% (Nagelkerke R^2) of the variance in decision to

administer naloxone and correctly classified 61.7% of cases. The positive predictive

value was 73.2% and negative predictive value was 47.4%. Of the three predictor

variables, only one was statistically significant: TEQ score (as shown in Table 3).

Neither the AS-SU or the AOAS scores reached statistical significance ($p = .26, p =$

.052).

Table 3

Logistic Regression Predicting Decision to Administer Naloxone

	B	*SE*	Wald	*df*	*p*	Odds Ratio
TEQ Score	.11	.05	4.98	1	.03	1.12
AS-SU Score	-.02	.02	1.25	1	.26	.98
AOAS Score	.13	.07	3.77	1	.05	1.14

CHAPTER 5: DISCUSSION

Interpretation and Implications

Hypothesis 1. It was hypothesized that participants with higher levels of empathy would be significantly more likely to administer naloxone. The results of both the bivariate correlation and the logistic regression demonstrated a relationship between the level of empathy and the decision to administer naloxone. The achieved statistical significance demonstrated a high level of empathy as a predictor of the decision to administer naloxone in the event a person encounters someone experiencing an opioid overdose. These results provide support for the first hypothesis.

Hypothesis 2. It was hypothesized that participants with lower levels of stigma toward opioid users would be significantly more likely to administer naloxone. The results of the bivariate correlation demonstrated an inverse relationship between the level of stigma and the decision to administer naloxone. This would support the second hypothesis. Upon further analysis, the logistic regression did not reach statistical significance. Due to the results of the logistic regression, the second hypothesis was not supported, and a low level of stigma was not identified as a predictor of the decision to administer naloxone.

Hypothesis 3. It was hypothesized that participants with lower levels of concern regarding legal/civil ramifications would be significantly more likely to administer naloxone. During preliminary analyses, the concern over both legal and civil ramifications was not found to be significantly correlated with the decision to administer naloxone. Therefore, this variable was not included in the logistic regression. Because of this, this hypothesis was not supported, and concern over legal/civil ramifications was

not determined to relate to the decision to administer naloxone in the event of an

overdose.

      Hypothesis 4. It was hypothesized that participants with significantly lower

degrees of negative attribution toward those who use opioids would be more likely to

administer naloxone. The bivariate correlation demonstrated a relationship between the

level of personal attribution toward substance use and the decision to administer

naloxone. The logistic regression demonstrated this relationship did not meet statistical

significance ($p = .052$). For this reason, hypothesis 4 was not supported, and personal

attribution level was not considered to be a predictor of the decision to administer

naloxone. It is possible that with a higher power, this relationship would have yielded

statistical significance and should be considered in further research.

      Interpretation of the results of this study indicates that of the four hypotheses, the

variable that had the most significant impact on the decision to administer naloxone to

someone overdosing on opioids was level of empathy, with people who have higher

empathy being more likely to administer it. It is important to note the measure used

considered the general construct of empathy, not empathy toward those who use

substances specifically.

      Although not statistically significant as predictors, both levels of stigma and

levels of personal attribution were correlated with the decision to administer naloxone.

This indicates that, although not predictive, low levels of stigma and personal attribution

for substance abuse appear to be linked to the decision to administer naloxone.

      Finally, the concerns of legal and civil ramifications were not correlated with the

decision to administer naloxone. This means that there was no significant relationship

found between the level of concern of being charged with a crime or lawsuit and the ultimate decision of administering naloxone to someone experiencing an overdose.

The implications of this study are vast. The results of this study can be utilized to inform multiple facets of the efforts to use naloxone to save lives in the event of opioid overdoses. This study may provide useful information regarding the degree to which individuals are willing to administer naloxone and factors that may influence this decision. Knowledge about the factors that increase an individual's likelihood of administering naloxone can be useful to many groups of people, such as policymakers, educators, and family counselors. The information gathered in this study can be used to adapt programs to capitalize on these factors. Since results indicate that level of empathy predicts the decision to utilize naloxone, training efforts should include material that is used to foster empathy. Furthermore, because results support an inverse relationship between stigma and the decision to administer naloxone, those who work in the prevention field can direct their efforts toward fighting stigma. The same can be said for the levels of personal attribution toward those with substance use problems: Training efforts can provide information that lowers the level of personal attribution and capitalizes on disseminating the disease concept of addiction to decrease beliefs concerning the overdosed persons' choice to use drugs. This same information can be utilized to empirically justify funding toward the aforementioned prevention efforts.

In addition to providing insight into the administration of naloxone, the results of this study can inform the strategies of future public outreach programs for substance use and naloxone administration. The factors that are associated with the decision to administer naloxone can be utilized to direct the efforts of those working in prevention.

The results of this study demonstrate that high empathy is correlated with the decision to administer naloxone; therefore, outreach efforts can be targeted toward the public's empathy.

Results measuring the degree of the endorsement of the disease concept cannot definitively identify whether the disease concept is permeating into the general public. The results demonstrate the sample in this study have some levels of personal attribution, indicating they may endorse a moralistic view of substance use; therefore, the results are indicative of the need for further education regarding the disease concept of addiction.

Limitations

The primary limitation of this study is the use of a convenience sample. As such, the results of this study may only generalize to college students. The decision to use a convenience sample was made with the acknowledgement of trading potential randomization and generalizability for a sample with similar ages, education levels, and exposure to contemporary teachings about substance use disorders. Although socioeconomic data were collected, it was within a sample of college students and results may not generalize to low-education families. In addition, other possible variables of interest were represented due to being missing from the demographic information. For example, one variable that was not collected was previous legal history. It is conceivable that those with legal histories may have more concern about legal ramifications if they have some sort of probation or parole indicating they are not to have interactions with the authorities. It is also conceivable this higher level of concern may impact their decisions more than those who have no legal histories.

Additionally, the use of a vignette may impact the ecological validity of this study. Because the vignette indicates the participant has had the training to carry naloxone, the reported likelihood of administration may be inflated. This was mitigated by adding an item asking the participant to indicate how closely he or she believes his or her choice of action matches how he or she would respond in real life. During the primary analyses, a correlation was not found between confidence ratings and decisions to administer naloxone (See Table 1). This indicates that people's actions may differ in real-life scenarios; however, it appears that participants took this into consideration due to the neutral nature of the mean of the responses. This may be the result of high, yet not perfect, confidence in their chosen next courses of action. Similarly, the use of self-report measures may impact the validity of participant responses due to the potential presence of the Hawthorne effect. In future versions of this study, it may be helpful to include some measure of social desirability, such as the Marlowe-Crowne Social Desirability Scale, order to mitigate this limitation.

The use of social media to collect data can be a limitation in interpreting these results. Due to the nature of social media, inferences cannot be made about specific geographic or cultural regions. Data collection via social media also requires the participants to answer honestly to the questions concerning the inclusion criterion and that each participant only took the survey one time. A limitation identified after data collection included that the annual household income was not specified to being USD and could have been entered in another currency rate, which may impact the accuracy of the socioeconomic statuses represented in the sample.

Another limitation of this study is the use of an adapted measure to quantify the participant's level of personal attribution toward those using opioids. The adapted version of the Attributions of Obesity Scale has no established validity or reliability. Although this measure has not been validated to measure attitudes toward the substance using population, it is believed that items measure the same concepts with relation to a compulsive behavior. After data collection, it was decided to not use the full adapted measure because some items did not fully measure the desired construct. Instead, only four questions were used in the analysis: 1. Addiction is a chronic disease of the brain, 2. Most addicted people could stop using drugs if they were motivated to do so, 5, Medical care for addicted patients without any other medication conditions should be covered by healthcare, and 11. It is difficult to feel empathy for an addicted person. These items were chosen as it was deemed their answers would measure the level of personal attribution that would equate to endorsing either the disease concept or moral model. Due to the lack of psychometrics on this measure, it is plausible that the biases of the researchers impacted the chosen items.

Additionally, there are only two items that measured the participants' concern regarding the potential for legal/civil ramifications. The lack of items measuring this concept may mean that the construct was not accurately measured as a factor in the participants' decision whether to administer naloxone in the vignette.

Furthermore, the choice provided could have dichotomized the participants' options to either help or not help the encountered individual. The decision was made to provide additional responses to learn more about the various degrees of help a participant would choose to provide.

The formatting of this survey can be considered a limitation. The present study used an adapted version of the Attributions of Obesity Scale (Foster et al., 2003). The final section of this measure included a semantic differential scale that did not include anchors. This format did not seemlessly transfer into the REDcap software, which could have potentially caused confusion for the participants. Similarly, the entire survey consisted of 69 items. Upon analyzing the data, it was found that 233 participants started the survey, yet only 128 surveys were able to be analyzed. The remainder of the surveys were not able to be analyzed due to not being completed. Future adapatations of this study may benefit from condensing items to have a higher completion rate of responses.

Future Directions

Future variations of this study should be completed with varying populations. Assessing the likelihood of naloxone administration is important among non-student adults, first-responders, newly trained individuals, college staff, and beyond. Each group possesses unique qualities that may impact their decisions to utilize naloxone should they encounter an overdosed person. Future research with various populations would allow for further development in the efforts to expand the carrying and utilization of naloxone.

These results can be used to assess and develop various training methods for opioid overdose recognition and naloxone administration. Future studies can take the results of the present study and assess training efforts and ensure they are capitalizing on the characteristics that will contribute to trainees' decisions to use naloxone. It would also be beneficial to assess the factors that contribute to an individual's decision to become trained in naloxone.

Considering results indicate empathy as a predictor of the decision to administer naloxone, it would be imperative for future research to examine how to build empathy for those afflicted with substance use disorders and implement those results into training strategies. The knowledge gained in this study could change the modalities of naloxone training to foster empathy and increase the likelihood that the participants of trainings will carry and use naloxone should they encounter someone who has overdosed.

The knowledge that empathy is an indicator of someone choosing to administer naloxone can be a helpful tool in clinical situations. This information can be used to increase empathy in family members of those seeking treatment for OUD. If family members have empathy for a newly discharged patient, they have the potential to accept the recommendation of keeping naloxone in their homes to use in the event of a relapse.

The results of this study can be used to inform future policy. Identifying factors that increase the likelihood of individuals carrying and utilizing naloxone may help policymakers more effectively develop strategies to combat deaths caused by opioid overdose. Informed and effective policies can change public perceptions regarding opioid addiction. Reducing public stigma can help addiction to be viewed the same as other chronic relapsing conditions, such as diabetes and asthma, and pave the way for naloxone to be as visible and accessible as a defibrillator. Greater accessibility to naloxone will greatly increase public safety and reduction of opioid deaths.

REFERENCES

Alcoholics Anonymous. (2014). *Alcoholics Anonymous: The story of how many thousands of men and women have recovered from alcoholism.* New York, NY: Alcoholics Anonymous World.

Austin, G. (1979). *Perspectives on the history of psychoactive substance use.* Rockville, MD: National Institute on Drug Abuse.

Barnett, P. (2009). Comparison of costs and utilization among buprenorphine and methadone patients. *Addiction, 104*(6), 982-992. doi:10.1111/j.1360-0443.2009.02539.x

Barry, C., Kennedy-Hendricks, A., Gollust, S., Niederdeppe, J., Bachuber, M., Webster, D., & McGinty, E. (2016). Understanding Americans' views on opioid pain reliever abuse. *Addiction, 111*(1)*,* 85-93. doi:10.1111/add.13077

Batson, C. D., & Duncan, B. D., Ackerman, P., Buckley, T., & Birch, K. (1981). Is empathic emotion a source of altruistic motivation? *Journal of Personality and Social Psychology*, *40*(2), 290–302. doi:10.1037/0022-3514.40.2.290

Batson, C. D., Polycarpou, M. O., Harmon-Jones, E., Imhoff, H. J., Mitchener, E. C., Bednar, L. L., . . . Highberger, L. (1997). Empathy and attitudes: Can feeling for a member of a stigmatized group improve feelings toward the group? *Journal of Personality and Social Psychology, 72*(1), 105-118.

Brown, S. (2011). Standardized measures for substance use stigma. *Drug and Alcohol Dependency, 116*, 137-141. doi:10.1016/j.drugalcdep.2010.12.005

Burris, S., Norland, J., & Edlin, B. (2001). Legal aspects of providing naloxone to heroin

  users in the United States. *International Journal of Drug Policy, 12*(3), 237-298.

  doi:10.1016/S0955-3959(01)00080-9

Carrera, P., Oceja, L., Caballero, A., Muñoz, D., López-Pérez, B., & Ambrona, T.

  (2012). I feel so sorry! Tapping the joint influence of empathy and personal

  distress on helping behavior. *Motivation and Emotion, 37*, 1-11.

  doi:10.1007/s11031-012-9302-9

Center for Behavioral Health Statistics and Quality. (2017). *2016 National Survey on*

  Drug Use and Health: Detailed tables. Rockville, MD: Substance Abuse and

  Mental Health Services Administration.

Centers for Disease Control and Prevention. (2018). U.S. Opioid Prescribing Rate Maps,

  CDC Injury Center. Retrieved from https://www.cdc.gov/drugoverdose/maps/

  rxrate-maps.html

Centers for Disease Control and Prevention. (2019). CDC STATCAST - Week of

  September 9, 2019. Retrieved from https://www.cdc.gov/nchs/pressroom/podcasts/

  20190911/20190911.htm

Chang, H.-Y., Kharrazi, H., Bodycombe, D., Weiner, J., & Alexander, C. (2018).

  Healthcare costs and utilization associated with high-risk prescription opioid use:

  a retrospective cohort study. *BMC Medicine, 16,* 69.

Davis, C., Carr, J., Southwell, J., & Beletsky, L. (2015). Engaging law enforcement in

  overdose reversal initiatives: Authorization and liability for naloxone

  administration. *American Journal of Public Health*, 1530-1537.

Dudzik, L. (2017). Naloxone administration by law enforcement officers in Illinois: A

policy analysis. *Law Enforcement Executive Forum, 17*(2), 12-26.

Dugosh, K., Abraham, A., Seymour, B., McLoyd, K., Chalk, M., & Festinger, D. (2016).

A systematic review on the use of psychosocial interventions in conjunction with

medications for the treatment of opioid addiction. *Journal of Addiction

Medicine*, *10*(2), 91-101. doi:10.1097/ADM.0000000000000193

Escohotado, A. (1999). *A brief history of drugs.* Rochester, VT: Park Street Press.

Florence, C., Zhou, C., Luo, F., & Xu, L. (2016). The economic burden of prescription

opioid overdose, abuse and dependence in the United States. *Med Care, 54*(10),

901-906. doi:10.1097/MLR.0000000000000625

Foster, G. D., Wadden, T. A., Makris, A. P., Davidson, D., Sanderson, R. S., Allison, D.

B., & Kessler, A. (2003). Primary care physicians' attitudes about obesity and its

treatment. *Obesity Research*, *11*(10), 1168-1177. doi:10.1038/oby.2003.161

Gatewood, A., Van Wert, M., Andrada, A., & Surkan, P. (2016). Academic physicians'

and medical students' perceived barriers toward bystander administered naloxone

as an overdose prevention strategy. *Addictive Behaviors, 61*, 40-46.

doi:10.1016/j.addbeh.2016.05.013

Green, T., Zaller, N., Palacios, N., Bownman, S., Ray, M., Heimer, R., & Case, P. (2013).

Law enforcement attitudes toward overdose prevention and response. *Drug and

Alcohol Dependence*, *133*(2), 677-684. doi:10.1016/j.drugalcdep.2013.08.018

Harmreduction.org. (2020). Understanding naloxone. Retrieved from

https://harmreduction.org/issues/overdose-prevention/overview/overdose-

basics/understanding-naloxone/

Heavey, S. C., Chang, Y.-P., Vest, B. M., Collins, R. L., Wieczorek, W., & Homish, G.

    (2018). 'I have it just in case'—Naloxone access and changes in opioid use

    behaviours. *International Journal of Drug Policy, 51*, 27-35.

    doi:10.1016/j.drugpo.2017.09.015

Henniger, A., & Sung, H.-E. (2014). *Encyclopedia of Criminology and Criminal Justice.*

    New York, NY: Springer.

Hoffman, J. (1990). The historical shift in the perception of opiates: from medicine to

    social medicine. *Journal of Psychoactive Drugs, 22*(1), 53-62.

    doi:10.1080/02791072.1990.10472197

Inaba, D., & Cohen, W. (2007). *Uppers, downers, all arounders: Physical and mental

    effects of psychoactive drugs* (6th ed.). Medford, OR: CNS Productions, Inc.

Khatiwoda, P., Proeschold-Bell, R., Meade, C., Park, L., & Proeschold-Bell, S. (2018).

    Facilitators and barriers to naloxone kit use Among opioid-dependent patients

    enrolled in medication assisted therapy clinics in North Carolina. *North Carolina

    Medical Journal, 79*(3), 149-155. doi:10.18043/ncm.79.3.149

Koester, S., Mueller, S., Raville, L., Langegger, S., & Binswanger, I. (2017). Why are

    some people who have received overdose education and naloxone reticent to call

    Emergency Medical Services in the event of overdose? *International Journal of

    Drug Policy, 48*, 115-124. doi:10.1016/j.drugpo.2017.06.008

Kokosky, G. (2018). Understanding naloxone standing orders is vital. *Pharmacy Times*.

Kuhn, C., Swartzwelder, S., & Wilson, W. (2003). *Buzzed: the straight facts about the

    most used and abused drugs from alcohol to ecstasy* (2nd ed.). New York, NY:

    W. W. Norton & Co.

Link, B., Cullen, F., Frank, J., & Wozniak, J. (1987). The social rejection of former

    mental patients: understanding why labels matter. *American Journal of Sociology,*

    92(6), 1461-1500.

Lott, D., & Rhodes, J. (2006). Opioid overdose and naloxone education in a substance

    use disorder treatment program. *American Journal of Addiction, 25*, 221-226.

    doi:10.1111/ajad.12364

Mattick, R. E. (2014). Buprenorphine maintenance therapy versus no opioid replacement

    therapy for opioid dependence. *Cochrane Database of Systematic Reviews*.

Mattick, R., Breen, C., Kimber, J., & Davoli, M. (2009). Methadone maintenance therapy

    versus no opioid replacement therapy for opioid dependence. *Cochrane Database*

    of Systematic Reviews. doi:10.1002/14651858.CD002209.pub2

Muhuri P., Gfroerer J., & Davies M. (2013) Associations of nonmedical pain reliever use

    and initiation of heroin use in the United States CBHSQ data review. *Center for*

    Behavioral Health Statistics and Quality, SAMHSA, 1-17

National Institute on Drug Abuse. (2016). Fentanyl. Retrieved from

    https://www.drugabuse.gov/drugs-abuse/fentanyl

National Institute on Drug Abuse. (2019). Opioid overdose crisis. Retrieved

    from https://www.drugabuse.gov/drugs-abuse/opioids/opioid-overdose-

    crisis#seven

Office of National Drug Control Policy and Substance Abuse and Mental Health Services

    Association. Opioid toolkit. (2013). *Alcoholism & Drug Abuse Weekly, 25*(34),

    4-5. Retrieved from https://search-ebscohost.com.ezproxy.pcom.edu/login.aspx?-

    direct=true&db=heh&AN=90088672&site=eds-live&scope=site

Penn, D., Guynan, K., Daily, T., Spaulding, W., Garbin, C., & Sullivan, M. (1994).

    Dispelling the stigma of schizophrenia: what sort of information is best?

    Schizophrenia Bulletin, 20(3), 567-578. doi:10.1093/schbul/20.3.567

Pennsylvania Dept of Health. (2018). Naloxone. Retrieved from

    https://www.health.pa.gov/topics/disease/Opioids/Pages/Naloxone.aspx

Rosenberg, C. (1995). *The care of strangers: The rise of America's hospital system*.

    Baltimore, MD: Johns Hopkins University Press.

Rothman, D. (2001). *The discovery of the aslyum: Social order and disorder in the new*

    republic (2nd ed.). Boston, MA: Little Brown.

Ryan, S. (2018). Calculating the real costs of the opioid crisis. *American Academy of*

    Pediatrics, 141(4), e20174129. doi:10.1542/peds.2017.4129

Schwartz, R., Gryczynski, J., O'Grady, K., Sharfstein, J., Warren, G., Olsen, Y., . . .

    Jaffe, J. (2013). Opioid agonist treatments and heroin overdose deaths in

    Baltimore, Maryland, 1995-2009. *American Journal of Public Health, 103*(5),

    917-922.

Spreng, N., McKinnon, M., Mar, R., & Levine, B. (2009). The Toronto Empathy

    Questionnaire: Scale development and initial validation of a factor-analytic

    solution to multiple empathy measures. *Journal of Personality Assessment*, 62-71.

    doi:10.1080/00223890802484381

Substance Abuse and Mental Health Services Association. (2020). Medication and

    counseling treatment. Retrieved from https://www.samhsa.gov/medication-

    assisted-treatment/treatment

United States Food and Drug Administration (FDA). (2016). Naloxone for treatment of

    opioid overdose. Retrieved from https://www.fda.gov/media/100429/download

United States Surgeon General. (2018). U.S. Surgeon General's advisory on naloxone

    and opioid overdose. Retrieved from https://www.hhs.gov/surgeongeneral/prioriti

    es/opioids-and-addiction/naloxone-advisory/index.html

University of Maryland. (2016). Naloxone: State legislation and standing orders.

    Retrieved from https://ndews.umd.edu/resources/naloxone-state-legislation-and-

    standing-orders

Vonasch, A., Clark, C., Lau, S., Vohs, K., & Baumeister, R. (2017). Ordinary people

    associate addiction with loss of free will. *Addictive Behavior Reports*, *5,* 56-66.

    doi:10.1016/j.abrep.2017.01.002

Waldhoer, M., Bartlett, S., & Whistler, J. (2004). Opioid receptors. *Annual Review of*

    Biochemistry, 73(1), 953-990. doi:10.1146/annurev.biochem.73.011303.073940

White, W. (1998). *Slaying the dragon.* Normal, IL: Chestnut Health Systems/Lighthouse

    Institute.

APPENDIX A

Demographic Questionnaire

1. Biological Sex: Male_____   Female_____

2. Are you 18 years of age or older? Yes_____ No_____

3. Age (in years):

4. Race/Ethnicity:

   a. White
   b. Black or African American
   c. Hispanic, Spanish, or Latino
   d. American Indian or Alaskan Native
   e. Asian
   f. Native Hawaiian or Pacific Islander
   g. Other

5. Are you currently enrolled in an undergraduate or trade school program? Yes ___
   No___

6. Area of Study/College Major:_____

7. Household income past year (if you live with your parent/guardian when school is
   not in session, include their income):_____

8. Have you, a family member, or friend experienced problems with substance use
   or misuse? Yes_____ No_____

9. Are you aware of the purpose of naloxone (i.e., Narcan®/Evzio®)? Yes_____
   No_____

10. Have you, a family member, or friend ever needed to be given naxolone
    (Narcan®/Evzio®)? Yes_____ No_____

11. Are you currently trained in the proper administration of naloxone (i.e.,
    Narcan®/Evzio®)? Yes_____ No_____

12. If yes, do you carry it with you regularly Yes_____ No_____ Not Applicable _____

APPENDIX B

Vignette

Please read the following vignette and respond to the corresponding item to indicate your next course of action.

You have been trained on the proper administration of naloxone, a nasal spray designed to reverse the effects of an opioid overdose. You also learned that the medication has no adverse effects even if used with someone who is not experiencing an overdose. You have 1 dose with you in your backpack. As you are traveling to class, you decide to stop in a convenience store to buy a cup of coffee and use the restroom. When you enter the convenience store, there are a few other customers in addition to the clerk. Upon entering the restroom, you notice a person sitting on the floor in the corner of the room. The person is slumped over on the floor and is breathing so slowly that it is almost hard to tell if they are breathing at all. They do not respond when you ask if they are feeling ok, and you see their lips are beginning to turn a shade of blue. You then see marks on their arm and immediately recognize this as an opioid overdose.

Please indicate your next course of action:
(1) administer naloxone by spraying a partial dose in each nostril
(2) ask another customer to administer the naloxone
(3) call 911 yourself without administering naloxone
(4) ensure another witness calls 911
(5) not get involved

How confident are you, on a scale of 1-5 (1 being not confident and 5 being completely confident) that you would definitely follow this course of action in real life?

Not   Completely
Confident   Confident

      1   2   3   4   5

APPENDIX C

Concern Over Legal/Civil Ramifications

Please indicate, on a scale of 1-5 (1 being did not influence and 5 being completely influenced) the degree to which your concerns about potential legal ramifications (being charged with a crime) may have influenced the course of action you took in the previous scenario.

Did Not   Completely
Influence   Influenced

      1   2   3   4   5

Please indicate on a scale of 1-5, (1 being did not influence and 5 being completely influenced) the degree to which your concerns about potential civil ramifications (being subject to a lawsuit) may have influenced the course of action you took in the previous scenario.

Did Not   Completely
Influence   Influenced

      1   2   3   4   5

APPENDIX D

Toronto Empathy Questionnaire

Below is a list of statements. Please read each statement carefully and rate how frequently you feel or act in the manner described. Circle your answer on the response form. There are no right or wrong answers or trick questions. Please answer each question as honestly as you can.

		Never	Rarely	Sometimes	Often	Always
1.	When someone else is feeling excited, I tend to get excited too	0	1	2	3	4
2.	Other people's misfortunes do not disturb me a great deal	0	1	2	3	4
3.	It upsets me to see someone being treated disrespectfully	0	1	2	3	4
4.	I remain unaffected when someone close to me is happy	0	1	2	3	4
5.	I enjoy making other people feel better	0	1	2	3	4
6.	I have tender, concerned feelings for people less fortunate than me	0	1	2	3	4
7.	When a friend starts to talk about his\her problems, I try to steer the conversation towards something else	0	1	2	3	4
8.	I can tell when others are sad even when they do not say anything	0	1	2	3	4
9.	I find that I am "in tune" with other people's moods	0	1	2	3	4
10.	I do not feel sympathy for people who cause their own serious illnesses	0	1	2	3	4
11.	I become irritated when someone cries	0	1	2	3	4
12.	I am not really interested in how other people feel	0	1	2	3	4
13.	I get a strong urge to help when I see someone who is upset	0	1	2	3	4
14.	When I see someone being treated unfairly, I do not feel very much pity for them	0	1	2	3	4
15.	I find it silly for people to cry out of happiness	0	1	2	3	4
16.	When I see someone being taken advantage of, I feel kind of protective towards him\her	0	1	2	3	4

APPENDIX E

Affect Scale for Substance Users (AS-SU)

Indicate how you would feel if you interacted with someone with an opioid use disorder?

Pessimistic	1	2	3	4	5	6	7	Optimistic
Tranquil	1	2	3	4	5	6	7	Anxious
Supportive	1	2	3	4	5	6	7	Resentful
Fearful	1	2	3	4	5	6	7	Confident
Empathic	1	2	3	4	5	6	7	Angry
Disgusted	1	2	3	4	5	6	7	Sympathetic
Apprehensive	1	2	3	4	5	6	7	Comfortable
Irritable	1	2	3	4	5	6	7	Patient
Relaxed	1	2	3	4	5	6	7	Tense
Calm	1	2	3	4	5	6	7	Nervous

APPENDIX F:

Attributions of Addiction Scale

Using the following scale, please indicate the degree to which you agree or disagree with the statements below.

1 – Strongly Disagree   2 – Disagree   3 – Neutral   4- Agree   5 – Strongly Agree

___ Addiction is a chronic disease associated with differences in the brain.
___ Most addicted people could stop using drugs if they were motivated to do so.
___ I have negative reactions toward addicted people based on their appearance.
___ I am obligated to educate addicted people on the health risks of using drugs.
___ Medical care for addicted patients without any other medical conditions
    should be
    covered by health care.
___ For most people addicted to drugs, long-term abstinence is impossible.
___ Addicted persons are well aware of the health risks of drug use.
___ I often feel uncomfortable when interacting with an addicted person.
___ Most drug addicted persons will not become abstinent.
___ It does not hurt to apply "scare tactics" to encourage addicted persons to
    convince them to stop using drugs.
___ It is difficult to feel empathy for an addicted person.
___ I feel like I have a good understanding of how someone becomes addicted.

Listed below are adjective sometimes used to describe addicted people.
Please indicate your beliefs about addicted people.

Successful	__:__:__:__:__:__:__	Unsuccessful	Bad	__:__:__:__:__:__	Good
Weak-willed	__:__:__:__:__:__:__	Strong-Willed	Sloppy	__:__:__:__:__:__	Neat
Handsome	__:__:__:__:__:__:__	Ugly	Compliant	__:__:__:__:__:__	Noncompliant
Graceful	__:__:__:__:__:__:__	Awkward	Hard to talk to	__:__:__:__:__:__	Easy to talk to
Dirty	__:__:__:__:__:__:__	Clean	Attractive	__:__:__:__:__:__	Unattractive
Pleasant	__:__:__:__:__:__:__	Unpleasant	Lazy	__:__:__:__:__:__	Industrious
Dishonest	__:__:__:__:__:__:__	Honest	Likeable	__:__:__:__:__:__	Not Likeable
Warm	__:__:__:__:__:__:__	Cold			