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Opioid Use Disorder: A Crisis of Concern

Evangella Harville
exh19b@acu.edu

This doctoral project, directed and approved by the candidate's committee, has been accepted by the College of Graduate and Professional Studies of Abilene Christian University in partial fulfillment of the requirements for the degree

Doctor of Nursing Practice

Nannette W. Glenn, Ph.D.

Dr. Nannette Glenn, Dean of the
College of Graduate and
Professional Studies

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Doctoral Project Committee:

Dr. Faisal Aboul-Enein, Chair

Dr. Roneisa Matero

Dr. Roneisa Matero

Dr. Lawrence Santiago

Abilene Christian University

School of Nursing

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by

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Dedication

This doctoral project is dedicated first and foremost to God, who has guided me on this journey, and to my husband, who has shown unconditional love and support from the beginning. Anthony, Antoinette, and Regina always said, “Mom, you can do it.” Kingsley, my five-year-old grandson, would sit next to me on his iPad thinking that he was doing homework as well. My late grandmother Mary, who raised me, instilled in me the virtues of perseverance and commitment and relentlessly encouraged me to strive for excellence. And last, I dedicate this project to all of the families that have lost a loved one due to opioid use disorder.

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Abstract

According to a statement from the U.S. Centers for Disease Control and Prevention, between 2000 and 2017, approximately 700,000 people died from drug overdoses in the United States. Approximately 128 persons lose their life each day from an opioid overdose. The data for this study were collected by the vice president of operations at the study site from a preexisting database for 2019 and 2020. The participants were inpatient patients, 18 and older, both male and female, and were from all ethnicities. The study facility was located in Western New York and offered a 30-bed inpatient treatment center with 24-hour care for individuals suffering from opioid use disorder (OUD). The healthcare team consisted of physicians, nurses, behavioral therapists, peer support specialists, and discharge planners. The objective of this descriptive, retrospective project was to investigate the following research questions: Research Question 1: During inpatient MAT treatment for OUD, is there a difference between treatments using buprenorphine/naloxone and those using Vivitrol in the length of stay of patients? Research Question 2: Is there a difference in these two MAT (buprenorphine and Vivitrol) outcomes when controlling for demographic variables of patients with OUD? Research Question 3: Does ethnicity moderate the relationship in MAT types and the length of stay among patients with OUD? The ability to implement the MAT program and experience the benefits is rewarding to the health care team, the patients, and their families. Further education is needed to assist in the fight against this deadly epidemic.

Keywords: Opioid use disorder, retrospective study, ethical considerations, demographics, economic impact, buprenorphine, and Vivitrol.

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Chapter 1: Introduction

According to a statement from the U.S. Centers for Disease Control and Prevention (CDC, 2018b), between 2000 and 2017, approximately 700,000 people died from drug overdoses in the United States. Specifically, 68% of these deaths, or about 70,200 persons, were opioid-related and occurred in 2017. About 128 persons die each day from an opioid overdose (CDC, 2018b). Opioids—codeine, fentanyl, hydrocodone, hydromorphone, meperidine, methadone, oxycodone—are primarily used as analgesics. The United States Department of Health and Human Services (HHS; n.d.) has considered that opioid-related deaths are a national emergency crisis that fundamentally influences issues in public health and social and government finances due to increases in health care costs, nearly $80 billion per year, and opioid use disorder (OUD) treatments.

Background

When the CDC first approved opioids, doctors did not think they were addictive, so they were prescribed in large quantities (CDC, 2018a). The national opioid use rate declined between 2012 and 2017. In 2017, the recommended prescription rate fell to 191 million prescriptions, or 58.7 prescriptions per 100 people (CDC, 2018a), a number last seen 10 years ago. Despite the reduction in opioid prescriptions in 2017, prescription rates remained high in specific territories across the nation. In 16% of U.S. districts, 100 opioid prescriptions per 100 people were written (CDC, 2018a).

Physician-prescribed opioids, including heroin and synthetic opioids like fentanyl, have caused approximately six times as many overdose deaths since 2000 (National Institute of Health [NIH], 2020). Over 47,000 individuals in 2017 died due to opioid overdose, and over 35% of those deaths were due to prescription opioids (CDC, 2018b). OUD is an enduring, long-term

disease that can cause significant social, well-being, and financial issues. Opioids are a group of medications that trigger feelings of pleasure and pain alleviation in the nervous system. Medical providers may at times offer medically warranted opioid prescriptions to oversee acute and persistent pain. Commonly used prescription opioids include oxycodone, fentanyl, buprenorphine, methadone, oxymorphone, hydrocodone, codeine, and morphine. However, heroin, which is an illicit drug, in commonly misused (NIH, 2020).

A propensity toward opioid dependence is described as a powerful, habitual desire to use opioid medications, even when there is no therapeutical need (NIH, 2020). A certain individual may be prone to opioid addiction even when taken as prescribed. Various solutions of opioids are abused or misused or diverted to other individuals. It is undetermined why some individuals are more probable to become dependent than others (NIH, 2020).

Opioids alter the brain's chemicals by interfering with neurotransmitters, leading to medication opposition, requiring an increase in dosage to achieve a comparative effect (NIH, 2017). Extended opioid use produces reliance. Significant reliance may result in physical psychological signs and symptoms of withdrawal when individuals quit taking the medication. Severely extended periods of opioid use may result in addiction. A small percentage may encounter a compulsive need for the drug (NIH, 2020). OUD can cause serious medical issues, as well as the risk of overdose. An overdose occurs when breathing slows or stops, causing unconsciousness or even death without immediate attention. Either legal and illicit opioids pose a possibility of overdose if used in irresponsible amounts or mixed with various medications, particularly with a sedative known as benzodiazepine (NIH, 2020).

Statement of the Problem

This project focused on evidence-based practice (EBP) for the effective treatment of OUDs. According to the NIH, 128 opioid overdose victims die every day in the United States (NIH, 2020). Opioid abuse and dependence, including narcotics, heroin, and synthetic opioids, such as fentanyl, has become a major crisis that is also impacting public health and government financial and social support. The CDC estimates that the total "financial burden" of OUD care in the United States alone is over $75 billion per year, including the costs of medical services, disabilities, treatment of predispositions, and illegal instructions and activities (NIH, 2020). In 2017, over 1.5 million people in the United States were diagnosed with opioid-induced OUD and over 650,000 were diagnosed with heroin use disorders (NIH, 2020).

Economic Impact

OUD's economic impact is a perpetuating crisis in the United States affecting individuals across all age brackets, ethnicities, and communities. Medicaid is one primary health program that contributes to OUD-related expenses. OUD patients require costly treatment assistance that includes inpatient treatment, prescription medications, and ongoing required health care. The average annual cost of medical treatment for OUD patients is over $75 billion (NIH, 2020). In late 2018, the Health Resources Services Administration (HRSA) used over $350 million for OUD and mental health patients in community health centers across the nation (HRSA, 2020). Telehealth has facilitated providing the necessary care for patients struggling with OUD and received a $700,000 grant to provide care to communities in need (HRSA, 2020). The societal cost increased from $11 billion to $80 billion between 2001 and 2018 (Leslie et al., 2019). OUD patients may also suffer from other comorbidities and require additional medical services. For this reason, they are more likely to use the emergency room (ER) and be admitted to hospitals for

more intensive care. OUD patients entering the ER have increased from a rate of nearly 10%, and OUD deaths have increased to over 200% (Leslie et al., 2019). OUD individuals with Medicaid are at increased risk of mental health issues and OUD compared to others.

Medicated-assisted treatment (MAT) for OUD consists of treatment using methadone, buprenorphine, or naltrexone and behavior counseling. Naltrexone is administered orally or via injection (NIDA, 2020). Over one-third of OUD patients are enrolled in the Medicaid program, and the annual individual health care cost for OUD patients ranges from approximately $6,000 to $15,000 and has continued to increase (NIDA, 2020).

Purpose of the Study

This descriptive and retrospective DNP project aimed to compare the efficacy of two different adjuvant therapies in the treatment facility for OUD patients: (a) buprenorphine, and (b) naltrexone Vivitrol (compound), naltrexone injection, extended-release, and Vivitrol injection. In this study, I examined current practices for OUD treatment and the number of patients who recovered during their stay. Patients with OUD receive care and support from nurses, doctors, and social workers during their treatment. Specifically, they receive palliative care with MAT to help patients recover from their addiction. MAT is the use of drug therapy in combination with behavioral therapy to treat OUD and help people recover (FDA, 2020).

MAT has been effective in treating opioid use since the start of the OUD epidemic in the United States. Every day, 128 people die from an overdose of OUD (CDC, 2018b). It’s a horrific statistic that poses a huge challenge, but nurses must provide the care and resources they need to save lives and produce positive results. MAT is one of the main strategies for the prevention, intervention, and treatment of opioids. The FDA has approved three drugs to treat OUD: buprenorphine, naltrexone, and methadone. Each of these treatments is safe and feasible when

combined with behavioral therapy and support (FDA, 2020). Once the patient is discharged, they must be continuously supported and treated externally to reduce the risk of recurrence.

Research Questions

RQ1: During inpatient MAT treatment for OUD, is there a difference between treatments using buprenorphine/naloxone and those using Vivitrol in the length of stay of patients?

RQ2: Is there a difference in these two MAT (buprenorphine and Vivitrol) outcomes when controlling for demographic variables of patients with OUD?

RQ3: Does ethnicity moderate the relationship in MAT types and the length of stay among patients with OUD?

MAT is used to provide a holistic approach to the management of OUD treatment. Studies show the combination of drugs and behavioral therapies can adequately address the problem of substance abuse. MAT can help recovery (Substance Abuse and Mental Health Service [SAMHSA], 2020b).

PICOT Question

For the study sample—adult patients with OUD—are there discernible differences in efficacy across two different MATs, buprenorphine/naloxone and Vivitrol, toward sustaining functional recovery (study outcome) over the length of stay (study timeframe)?

Significance of Problem

The importance of the descriptive, retrospective DNP project was its ability to identify discernible differences in efficacy between two different MATs: (a) buprenorphine/naloxone (consisting of buprenorphine, buprenorphine-naloxone, naloxone, and sublocade), and (b) Vivitrol (consisting of naltrexone, naltrexone injection, extended-release, and Vivitrol injection) over their length of stay to examine the complexity of opioid addiction that affects almost every

aspect of an individuals' life. The study was also important to address drug treatment program issues, including offering solutions to ancillary problems.

One benefit of the proposed project is that the findings may offer insight on how to sustain functional recovery in patients with OUD. Findings may also detail which treatment therapies patients may benefit from most during and following inpatient treatment discharge. Organizations that implement recommendations from the findings could benefit by demonstrating the facility has a productive program with sustained functional recovery of OUD patients throughout their length of stay. Results may equip nurses with tools, such as education and training, to provide quality care for patients. Finally, society at large may benefit as insights from study findings facilitate relationship building with patients' families and help patients become productive members of the community.

Definition of Key Terms

Dependence. Dependence refers to the need for something (Medical Dictionary, n.d.).

Drug. A drug is any substance that alters an organism's physiological state or brain when consumed (FDA, 2018).

Drug diversion. Drug diversion refers to the medical and legal issues of the trade-offs of legally prescribed controlled substances between people who are legally prescribed and others for illegal use (CDC, 2019).

Drug misuse/abuse. Drug misuse/abuse is defined as persistent, nontherapeutic medication use with the exclusive goal to alter one's disposition, influence, and condition of consciousness or affect a bodily function (WHO, 2020).

Drug withdrawal. Drug withdrawal is characterized by the emergence of symptoms upon sudden stopping or abatement of administration of prescription or recreational medications (Medical Dictionary, n.d.).

Medication-assisted treatment (MAT). MAT combines FDA-approved pharmaceutical therapy with counseling and behavioral therapies to provide a "holistic patient" approach to the treatment of substance-use disorders (SAMHSA, 2020b, para. 1). MAT combines FDA-approved drugs with counseling and behavioral therapies to provide a "whole-patient" approach to substance use disorder treatment (SAMHSA, 2020b, para. 1).

Opioids. Opioids are substances that act on opioid receptors in the body and are primarily used to relieve pain and discomfort (CDC, 2020).

Pain. Pain refers to physical discomfort caused by illness or injury (Merriam-Webster, n.d.).

Prescription. A prescription is an instruction written by a medical practitioner that authorizes a patient's use of medication for treatment (Merriam-Webster, n.d.).

Summary

The descriptive, retrospective study will focus on OUD patients that were initially prescribed opioid therapeutically and eventually misused and became addicted while using an opioid medication. Two different MATs (a) buprenorphine/naloxone (consisting of buprenorphine, buprenorphine-naloxone, naloxone, and sublocade) and, (b) Vivitrol (consisting of naltrexone, naltrexone injection, extended-release, and Vivitrol injection) were compared to determine which sustained functional recovery most effectively over their length of stay. The overall goal was to compare the effectiveness of these two MATs toward sustaining functional recovery.

Chapter 2: Literature Review

Restrictions on literature search apply to peer-reviewed articles, journals, publication years 2016-2020, articles written in English, and studies conducted in the United States, London, and the Ukraine only. Document searches were performed using the CDC, PubMed, Medline Plus, Department of Health and Human Services, NIH, and Cochrane archives. The main terms included in the literature search were: *adults*, *buprenorphine*, *therapeutic uses*, *and healthcare professionals*, *disorders/epidemiology*, *primary health care*, *behavioral health*, *behavioral therapy*, *pain management*, *intervention*, *prescription*, *overdose*, *dependence*, *withdrawal*, *prescribing*, *illegal*, *illicitly*, *manufactured*, *death*, *chronic disease*, *health*, *social-economic*, *pain*, *health care providers*, *fentanyl*, *compulsive*, *characterized*, *medically*, *misused*, *diverted*, *humans*, *injections*, *inpatient*, *statistics*, *numerical data*, *middle-aged*, *naltrexone*, *narcotic antagonist*, *opioid-related disorders*, *outpatient*, *randomized controlled trials*, *recurrence*, and *substance withdrawal syndrome*.

The study recruited 58 opioid-dependent participants to undergo MAT with buprenorphine (n = 26) or methadone (n = 32). The participants were recruited through local advertising and gave written informed consent to the study site treatment center's IRB-approved protocol after the procedures were fully explained. MAT showed almost positive clinical outcomes in terms of deaths from overdose, infectious disease, crime, and cultural background when transitioning from opioid agonists to long-acting opioids buprenorphine and methadone, but patients exacerbate the metabolic effects of methadone (Elman et al., 2020). In this study, subjects with metabolic syndrome tended to be more severe. They found that it reduced the craving for opiates and, unlike methadone, its role in metabolic disorders is unknown. Researchers have discovered that the MAT-delivery process needs to be fine-tuned. In particular,

the discussion of informed consent before the implementation of treatment plans should take into account the possibility of metabolic disorders. Researchers also emphasized the importance of lifestyle changes, including diet and exercise (Elman et al., 2020). However, buprenorphine is associated with a beneficial effect on reducing metabolic disputes and thirst, so the first step is to discuss informed consent before doctors consider that agonist therapy is needed.

Based on the finding that maternal and paternal phenotypes are passed down from generation to generation, this review shows that parental drug use history, especially the use of new synthetic opioids (NSOs), has a significant impact on the next generation. Individuals can develop OUD due to a family history of drug addiction. However, researchers have identified some genetic variations associated with drug addiction, suggesting that genetics only partially explains addiction (Gilardi et al., 2018). Researchers have found that opioid use affects the opioid responsiveness of children and future generations, perhaps through epigenetic mechanisms, even before conception. They found evidence that opioids can affect long-term psychological effects, especially drug susceptibility, tolerance, and possible effects on vulnerable drug abusers. The researchers warned that each clinical study has weaknesses that limit their confidence in understanding the true impact of NSO transmission on future generations. Finally, they recommended that future studies take into account maternal and maternal drug use patterns, as genetic transmission also occurs through the germ cells of the mother organisms (Gilardi et al., 2018).

In longitudinal studies, Hser et al. (2016) recruited 1,080 opiate-dependent participants in seven U.S. treatment programs from 2006 to 2009 to compare the long-term outcomes of MAT with buprenorphine (n = 630) or methadone (n = 450). The researchers found that there was no difference in mortality between patients taking buprenorphine or methadone. In contrast, the

prevalence of opioid use during follow-up of participants randomized to receive buprenorphine was higher than that of methadone. They concluded that many patients with OUD both during and outside of maintenance treatment performed better with the MAT maintenance. They recommended focusing on the factors that contribute to drug withdrawal due to the concomitant use of cocaine or other substances by the patient, inadequate dosage, concomitant psychological or stress conditions, and unintentional cessation of drug use (i.e., strict clinical requirements) (Hser et al., 2016).

Jarvis et al. (2018) conducted a systematic review and meta-analysis of three studies published between 2006 and 2017 on the efficacy of naltrexone (XR-NTX) in the treatment of opioid abuse/addiction. There were four research questions: (1) How successful have you been with XR-NTX?, (2) What is the XR-NTX compliance rate?, (3) Does XR-NTX reduce opioid use?, and (4) What are the factors associated with XR-NTX induction and adherence and opioid use during XR-NTX treatment? According to Jarvis et al., successful treatment with XR-NTX depends on two factors: initiation and continuation of the drug. Many people try to start XR-NTX but fail to get started, and most people who start treatment with XR-NTX stop treatment early (Jarvis et al., 2018). There were no significant differences in MAT results between doses of XR-NTX, buprenorphine, or methadone. XRNTX reduced opioid use compared to a placebo in Russian adults, but differences in retention between study groups confused this effect. XR-NTX appears to reduce opioid use, but there is little experimental evidence for this effect (Jarvis et al., 2018).

Klein and Seppala (2019) reported that MAT is proven to be effective due to the philosophical contradictions offered by many US treatment programs, but most US drug treatment providers do not use MAT. Klein and Seppala (2019) used a sample of 253 OUD

patients to compare treatment results for buprenorphine/naloxone, oral naltrexone, and injectable naltrexone. Patients posttreatment showed significantly higher withdrawal rates than those who reported noncompliance. Postdischarge recurrence was not associated with substance use, and adherence was primarily unrelated to changes in the frequency of alcohol or substance use. This study has shown that it is useful to use drugs containing partial opioid agonists such as buprenorphine as part of a 12-step treatment, and taking these drugs as prescribed gives good results (Klein & Seppala, 2019).

In another study, 135 Ukrainian patients with OUD were enrolled, received monthly injections of sustained-release naltrexone (XR-NTX), and were followed for three months (Makarenkoa et al., 2019). In Ukraine, methadone or buprenorphine MAT is available for the treatment of OUD, but the acceptability and scope of MAT remain low (Makarenkoa et al., 2019). XR-NTX has recently become known as another treatment option in this area, and researchers are trying to test its feasibility. Of the participants, 101 (75%) completed three 3 months of treatment (consecutive injections of XR-NTX), with a significant reduction in opioid use from self-reported (67% to 22%) and urine drug testing (77% to 24%). However, alcohol, marijuana, and stimulant consumption did not change (Makarenkoa et al., 2019). Drug cravings and depressive symptoms also declined significantly, and health-related quality-of-life scores improved over time. Researchers suggest that XR-NTX treatment results in a significant reduction in opioid use and an improvement in quality of life, suggesting that XR-NTX treatment is viable and well-tolerated in Ukraine for three months (Makarenkoa et al., 2019).

Oesterle et al. (2019) performed a brief review of the three major drugs approved by the FDA and used to treat OUD. This examination contains a useful history of MATs that began in the 19th century before investigating the historical background, benefits, challenges, and

governance of each MAT. Next, the authors compared the three MATs and observed that naltrexone has no real potential for addiction, but has compliance issues (Oesterle et al., 2019). Buprenorphine is associated with higher adherence than naltrexone and has produced better results. At constant doses (> 16 milligrams daily), adhesion/retention was similar to that of methadone. However, its partial agonist properties also lead to potential abuse (Oesterle et al., 2019). Although methadone shows the best therapeutic retention, its full agonistic properties offer the greatest potential for abuse and are the most expensive to use (Oesterle et al., 2019).

Presnall et al. (2019) used Missouri Medicaid 2008-2015 data (7,606 claims) to estimate the relative risk of missed buprenorphine-related treatments and hospital admissions in psychosocial programs and care settings. They compared the results of OUD treatment with and without buprenorphine with the results of buprenorphine treatment in the OUD psychosocial programs, such as federally-approved medical centers, clinics, and facilities. They found that the addition of MAT treatment with buprenorphine was associated with a significantly reduced risk of discontinuation compared with psychosocial treatment without buprenorphine. The researchers concluded that the use of buprenorphine in Medicaid treatment that included psychosocial OUDs reduced patient referral and hospitalization rates (Presnall et al., 2019). In addition, the clinic's buprenorphine treatment reduced these side effects. They recommended increasing access to buprenorphine in all settings, especially in outpatient medical settings, and through Medicaid to maximize patient retention. The expansion of the facility-funded OUD treatment network at the clinic would allow uninsured patients to access an expanded network of providers serving Medicaid beneficiaries with disabilities (Presnall, et al., 2019).

A 2018 London-based study consisted of thirty-six face-to-face, semi-structured qualitative interviews with daily heroin users without any treatment for opioid use (n = 12), those prescribed daily oral buprenorphine (n = 12), and those prescribed daily oral methadone (n = 12) (Tompkins et al., 2019). Researchers investigated the willingness of opiate users to inject drugs into long-term buprenorphine stores and the factors that influence their interests (Tompkins et al., 2019). Researchers were primarily aware of the high levels of craving, but not all participants were eager to receive buprenorphine in the depot, and five positive factors and one negative factor impacted their craving: (a) it decreased their exposure to pharmacies and drug treatment services, (b) their belief that depot could alleviate improper drug use and facilitate recovery, (c) they perceived the efficacy of depot buprenorphine, (d) the length of time and dosage were favorable of depot buprenorphine injections, (e) the administration of the depot buprenorphine injection in a medical setting could occur, and (f) a negative factor contributing to their desire was their perception of greater possible adverse events associated with depot buprenorphine injection (Tompkins et al., 2019). They concluded that when opioid users agree to buprenorphine treatment, they can reduce illicit drug use and promote recovery (Tompkins et al., 2019).

Researchers at West Virginia University School of Medicine and Psychiatry examined the medical records of 100 patients to assess the differences between psychiatric and distant disorder treatment programs. West Virginia University CRC Behavioral Medicine Psychiatry is the largest mental health facility in West Virginia. The facility provides treatment for OUDs on-site and in remote psychiatric clinics. Treatment of OUDs was tested with three results: use of other substances, median up to 30 and 90 consecutive days without supervised opioid use, and opioid use retention after 90 and 365 days of treatment. (Zheng et al., 2017). The researchers found no statistically significant difference in the use of the other substances after psychological

interventions with buprenorphine MAT via video conferencing and face-to-face MAT treatment (Zheng et al., 2017). This study provided important data on how alternative MAT procedures can increase access to psychiatric services through telemedicine for people with limited access to health care. Ultimately, researchers pointed out that not only "recovery is more than just drinking," but additional factors such as employment, relationships, marriage, and criminal activity are important factors influencing the outcome of recovery (Zheng et al., 2017, p. 138).

The OUD death epidemic in the United States continues to surge (CDC, 2018b). Approximately 750,000 individuals have succumbed to drug overdose since 1999 (Wide-Ranging Online Data for Epidemiologic Research [Wonder], 2020). Two out of three of those deaths were from opioids, specifically heroin, fentanyl, or by prescription (Wonder, 2020). In 2018, over 47,000 individuals overdosed on opioids, almost 70% of the total that died from a drug overdose that year (Wilson et al., 2020).

Between 1999 and 2018, there were three waves of opioid overdose deaths of nearly 500,000 people (Wonder, 2020). The first increase in opioid overdose began in the early 1990s and increased in late 1999 (CDC, 2011). The second wave occurred in 2010 when more people died from a heroin overdose (Rudd et al., 2014). Finally, the highest number of fentanyl-related deaths was in 2013 (Gladden et al., 2016). More recently, individuals have combined fentanyl with heroin and cocaine (Drug Enforcement Agency, 2019).

According to the NIDA (2020), about one in 20 patients who enter the ER for a nonlethal drug overdose die two days to one year after taking the drug. OUD treatment in the ER typically continues after discharge to diminish opioid-related deaths (NIDA, 2020). For example, patients are discharged with resources to follow up with outpatient or inpatient care; however, there is no follow-up care for these individuals. Weiner et al. (2020) found a significant number of

discharged OUD patients received hard copy resources containing information about drug treatment facilities but did not receive direct follow-up care. Between 2011 and 2015, over 11,000 patients treated in a Massachusetts hospital died anywhere between two days to one year from an overdose after treatment in an ER (Weiner et al., 2020). More specifically, close to 6% of these patients succumbed to opioid overdose within one year of the visit. Over 125 patients died within a month and 30 patients died within the first two days. The majority of these patients died at home before help could arrive (Weiner et al., 2020).

Evidence shows patients require a MAT program once discharged from the ER. For example, one study found patients without follow-up treatment after discharge from the ER had a higher death rate. Weiner et al. (2020) insisted medical professionals must administer buprenorphine to OUD patients to reduce the high death rate among patients discharged from the ER. He also demonstrated interest in determining OUD patients' survival rate given novel treatment relative to leaving patients to their own devices upon discharge with a list of treatment facility options (Weiner et al., 2020).

The literature review summarizes how MAT treatment is beneficial when patients consistently follow MAT treatment guidelines. Additionally, a review of the literature answers the research question of which MAT is used during inpatient treatment—buprenorphine/naloxone or Vivitrol—contributes most to sustaining functional recovery over the length of stay among patients with OUD? This study aimed to compare the efficacy of two different MATs.

Limiters and Research Methods

Out of the total number of articles, 20 used survey methodology. All searches focused on MAT and drug treatment facilities. There were 14 articles used and the CDC provided current

guidelines for patient clinical practice, including assessments for all possible treatments and dangers of and safety guidelines for discontinuing opioids (CDC, 2018a). The new guidelines published in 2016 specify health care providers and their patients should weigh the risks of opioid use for therapeutic purposes against the benefits before beginning an opioid regimen and begin usage only when both parties fully comprehend the potential consequences (CDC, 2018a).

The Effect of Opioid Use Disorder Across Generations

OUD is growing in the United States, and knowledge and respect for the epidemiology of OUD and risks and sequelae of OUD are crucial to decrease adverse outcomes and deaths. The following studies were conducted as an evidenced-based approach, enabling health care providers and nurses to implement preventative measures, treatments, and patient interventions that may minimize overdoses (Green, 2017).

According to the SMHSA (2018b), approximately 5.1 million young adults aged 18-25 years (i.e., over 14% of the young adult population) battled a substance use disorder in 2017. In 2017, about 3.4 million adults ages 18 to 25 years consumed large amounts of alcohol, which contributed to a disorder. Approximately two million young adults were diagnosed with an illicit drug disorder in 2017 (7.3% of young U.S. adults). Finally, heroin use among young adults between ages 18 and 25 years has doubled in the past decade.

Among adults between the ages of 26 and older in 2017, approximately 13 million battled an OUD, which represents 6% of the total population of adults aged 26 and older (SAMHSA, 2018b). In 2017, over 10 million adults in the United States aged 26 and older suffered from an alcohol use disorder, which represents 5% of the this population. Finally, about four million adults aged 26 years and over were diagnosed with an OUD in 2017, or about 2% of the this population).

In 2017, among older adults aged 65 years and older, over 1 million battled OUD (Bogunovic, 2012). In the same year, close to 1 million also suffered from alcohol disorder, with two-thirds battling the disorder before age 65, and over 90,000 suffered from OUD (SMSHA, 2018a). Between 20% and 65% of elderly individuals suffering from OUD also suffer from another mental health issue (Bogunovic, 2012).

Prevalence of Opioid Use Disorder

It is often challenging to select an effective treatment therapy for the patient. In the United States, approximately two million individuals are faced with OUD issues (SAMHSA, 2020a). Among individuals with OUD, specifically concerning prescribed opioids, close to 600,000 OUD cases are associated with heroin use, which is not a prescribed medication (National Academic Press, 2017). However, a considerable number of these individuals do not receive the necessary treatment they need (Dunlap & Edlund, 2018). One treatment option for OUD is MAT, including methadone, buprenorphine, and naltrexone. Alternatively, some individuals with OUD receive behavioral health treatment only. Several studies in the health care setting have found positive long-term effects of MAT and behavioral therapy on patient outcomes (Dunlap & Edlund, 2018).

An assessment of the risks and benefits of MAT and behavioral therapy is an important step in understanding which treatments would benefit patients most. Using MAT in combination with behavioral therapy once discharged may decrease rates of readmission into treatment facilities. Understanding outcomes related to MAT is crucial to identifying the most effective postdischarge treatment approaches for patients. The health care professional or treatment site may impact the patient's response to treatment and determine lifelong treatment success (Dunlap & Edlund, 2018).

Research has shown a holistic approach to combining MAT with counseling and behavioral therapy is effective for OUD patients (SAMHSA, 2020b). This combination may sustain recovery postdischarge from treatment facilities. FDA-approved opioid treatment medications include methadone, buprenorphine, and naltrexone (SAMHSA, 2018a).

Care After Inpatient Treatment

Patients commonly desire follow-up care. Health care workers and counselors, including case managers, often collaborate to arrange follow-up care with MAT for continuous patient support (Sharareh, et al., 2019). Sharareh and colleagues (2019) conducted a study with 372 English-speaking patients 18 years or older admitted for opioid detoxification during the enlistment time frame. Participants completed a 15-minute meeting during which nontreatment research staff directed evaluations. By the time the meeting began, individuals had been given an opioid agonist (Sharareh, et al., 2019). However, patients were not given full contact with treatment staff due to influence and so the opioid agonist was provided to them indirectly through nontreatment research staff. Findings showed that during gentle detoxification, patients' beliefs about prescriptions' viability, security, and consistency with a drug-free lifestyle facilitated their decision to choose MAT. Post-MAT treatment recovery choices contributed to whether patients began MAT treatment after detoxification given that MAT was the patient's choice of treatment. Additionally, patients who chose to not receive MAT held the most dissenting views toward MAT. Although many professionals in the healthcare setting play a role in treatment initiation and post-detoxification treatment, attempts to develop MAT may be beneficial if healthcare professionals provide continual care after discharge (Sharareh et al., 2019).

Miclette (2017) conducted a study involving collaboration between a group of researchers, policymakers, and clinicians in addressing gaps in evidence-based opioid policy and practice via the development of a medical design aimed to disrupt the OUD epidemic. Several opioid overdose scenarios were considered to help delineate how to close the gaps in OUD treatment, postdischarge follow-up care, and health care team coordination. All methods were evidence-based to benefit OUD patients (Miclette, 2017). Collaborative team members completed a survey assessing their perceptions of what would be most beneficial for the patients at the end of the conference (Miclette, 2017). Survey findings revealed a total of four favorable and attainable outcomes: (1) quality of care—payment rendered based on current evidence and quality of care, abolish implications of order in prescribing buprenorphine, and create a self-supporting accreditation organization with MAT facilities on quality of care and list other agencies and quality ratings; (2) continuity of care— provide follow-up care led by the health care team once the patient is discharged (e.g., discharge planner, peer groups, and MAT team), ensure personal health care providers are affiliated with MAT, and ensure the local ER is equipped to care for patients with OUD emergent conditions; (3) opioid prescribing and pain management—request insurance companies find alternative methods to opioids for treating pain, correlate prescription guidelines for federal funding, and hold state government agencies accountable for opioid prescribing; and (4) facility engagement— provide a list of different MAT facilities and providers and allow patients to choose where they want to go, allow family and caregivers to be involved with care, have patients rate different MAT facilities, and find ways to motivate individuals to seek treatment. Miclette (2017) stated findings fulfilled the short-term goal of polling researchers, policymakers, and clinicians, and the long-term goal is to

develop strategies in the prevention of prescription misuse and addiction to opioids (Miclette, 2017).

Summary

OUD deaths are an ongoing crisis in the United States (CDC, 2018b). According to the CDC (2018b), an estimated 700,000 drug overdose-related deaths have occurred in the United States between 2000 and 2017. Studies have shown MAT is effective in treating OUD since the beginning of the epidemic in the United States (CDC, 2018c). MAT, the combination of medication in conjunction with counseling and behavioral therapies, is one primary measure taken for opioid abuse prevention, intervention, and treatment. Research has shown that MAT is effective in the treatment of OUD and can assist individuals with recovery (FDA, 2020).

OUD treatment is an important topic for health care professionals in raising awareness of the gravity of the OUD crisis in the United States. Participation in MAT-treatment approaches is essential for addressing the OUD epidemic. MAT treatment is one approach that can be taken to counteract the opioid crisis through comprehensive pain management techniques and prescription monitoring remedies. Discussing the reasons individuals misuse and become addicted to opioids is the first crucial step toward reducing the supply of and demand for opioids. Preventative measures in the form of peer-group therapy or other interventions involving a certified health care team must address risk factors and challenges with self-control to produce cognitive and behavioral improvements in individuals with OUD (NIH, 2020). Significant priority should be given to the discovery of how to implement evidence-supported opioid prevention programs effectively. Historically, the high cost of interventions has been one barrier to their implementation (NIH, 2020).

Chapter 3: Research Method

This chapter reviews the research methodology used for this DNP project. A review of the methodology includes a discussion of the research approach, research strategies for data collection, sample selection, research process, data analysis procedures, ethical considerations, and research limitations. The purpose of this research was to test whether there were significant differences in the effectiveness of two different MATs in an inpatient facility. Participants were inpatient, male and female OUD patients aged 18 and older. Findings from this project may provide new insight on the sustainability of patients' functional recovery while in inpatient facilities and aid understanding on why patients relapse and return to drug treatment facilities.

Project Design

The project used a retrospective design looking at the types of therapies offered in inpatient care, which included computer data on the treatment practice used for OUD patients over the two years. The data were collected by the study site's vice president of operations from a preexisting database for 2019 and 2020 from their business intelligence office. The staff at the patient intake departments collected the original data. Due to the COVID-19 pandemic, I was unable to collect data myself. The research only involved the collection and analysis of identifiable health information to determine if there were discernable differences in efficacy when comparing two medication assistant therapies (buprenorphine and Vivitrol) toward sustaining functional recovery over their length of stay. The human subjects were inpatient OUD patients from the age of eighteen and older, male and female, and included all ethnicities. The retrospective study held concerning this project provides new information on patients admitted to drug treatment inpatient facilities. This project assisted in determining if there were discernible differences in efficacy when comparing two different MATs, buprenorphine/naloxone

(consisting of buprenorphine, buprenorphine-naloxone, naloxone, and sublocade) and Vivitrol (consisting of naltrexone, naltrexone injection, extended-release, and Vivitrol injection) toward sustaining functional recovery over the patients' length of stay. The drug treatment facility located in the Western New York State area is a 28-bed inpatient detoxification facility and 40 beds are termed *crisis*—often, patients move from detox to crisis stabilization to residential rehabilitation within 24-hours. The health care team consisted of physicians, nurses, licensed counselors, peer support, and discharge planners. This project looked at the types of therapies offered in an inpatient setting.

The participants were only identified by demographic and health information. There was no physical contact with the patients, and all were de-identified throughout the study. I investigated the frequencies of the demographic variables. I first conducted descriptive analyses for study variable characteristics, such as means, *SD*s, skewness, and kurtosis to evaluate the normality of the dependent variable and the continuous covariant of age. Also, I collected data on the length of stay of each participant. The second step of my preliminary analyses was to conduct assumptions tests to ensure ANCOVA assumptions were not violated. I conducted three separate tests of normality to address RQs 2 and 3 only. For homoscedasticity, I created a scatterplot of the standardized residual against the unstandardized predicted values of length of stay. I also tested the normality of residuals and created a normal Q-Q plot of the standardized residuals and homogeneity (equality) of variables and then conducted a Levene's test. The *p*-value must be over 0.5 (Levene, 1960).

RQ1: During inpatient MAT treatment for OUD, is there a difference between treatments using buprenorphine/naloxone and those using Vivitrol in the length of stay of patients?

RQ2: Is there a difference in these two MAT (buprenorphine and Vivitrol) outcomes when controlling for demographic variables of patients with OUD?

RQ3: Does ethnicity moderate the relationship in MAT types and the length of stay among patients with OUD?

The primary analysis for hypotheses H1, H2, and H3 was as follows:

H1: The independent sample *t*-test in which the MAT type was the predictor variable and the length of stay was the dependent variable.

H2: ANCOVA covariance with MAT type as the predictor, controlled for age, employment, sex, living arrangements, ethnicity, DX type, and year collected.

H3: ANCOVA analysis covariance with MAT type as the predictor, controlled for age, employment, sex, living arrangements, ethnicity, DX type, and year collected and ran interaction between MAT type and ethnicity.

Summary

Planning and the dedicated assistance from the vice president of operations at the facility in which I conducted the study assisted me with this DNP project. The findings from the data were important and relevant in providing MAT treatment for individuals suffering from OUD. Increasing the awareness of OUD along with continual training and education for healthcare professionals, patients, and their families will decrease the many barriers of evidence-based practice, which in this case provides a better outcome for patients suffering from OUD. In fulfilling the project objectives, the retrospective study was beneficial in obtaining information from the facility the provides MAT for individuals suffering from OUD.

Chapter 4: Results

Preliminary Analyses

Of the 433 participants, the majority were male (60%; see Table 1). Most participants were White (*n* = 367, 84.8%) and not Hispanic (*n* = 407, 94%). Over half of the participants lived with a spouse or relative (*n* = 254, 58.7%) and all remaining participants either lived with a nonrelative (*n* = 103, 23.8%) or alone (*n* = 76, 17.6%). Two-thirds of the sample were unemployed (*n* = 287, 66.3%). Individuals in the analysis had mild, moderate, or severe OUD, and most had severe cases as defined by the DSM diagnosis (*n* = 292, 67.4%), and of the 433 participants, 78 were given some kind of buprenorphine, and 36 were given Vivitrol. Descriptives for categorical study variables are illustrated in Table 1, and descriptives for continuous study variables are shown in Table 2. Both lengths of stay and age were normally distributed.

Table 1

Frequencies of Categorical Study Variables

Variable		*N*	%
Gender	Male	260	60.0
	Female	173	40.0
	Total	433	100.0
Race	White	367	84.8
	Black	33	7.6
	Other	33	7.6
	Total	433	100.0
Ethnicity	Not Hispanic	407	94.0
	Hispanic	22	5.1
	Missing	4	0.9
	Total	433	100.0
Living arrangement	Alone	76	17.6
	Spouse/Relatives	254	58.7
	Non-relative	103	23.8
	Total	433	100.0
Employment	Unemployed	287	66.3
	Employed	105	24.2
	Missing	41	9.5
	Total	433	100.0
DSM disorder	Mild	88	20.3
	Moderate	53	12.2
	Severe	292	67.4
	Total	433	100.0
MAT type	Buprenorphine/Naloxone	78	18.0
	Vivitrol	36	8.3
	Missing	319	73.7
	Total	433	100.0
Year collected	2019	230	53.1
	2020	203	46.9
	Total	433	100.0

Table 2

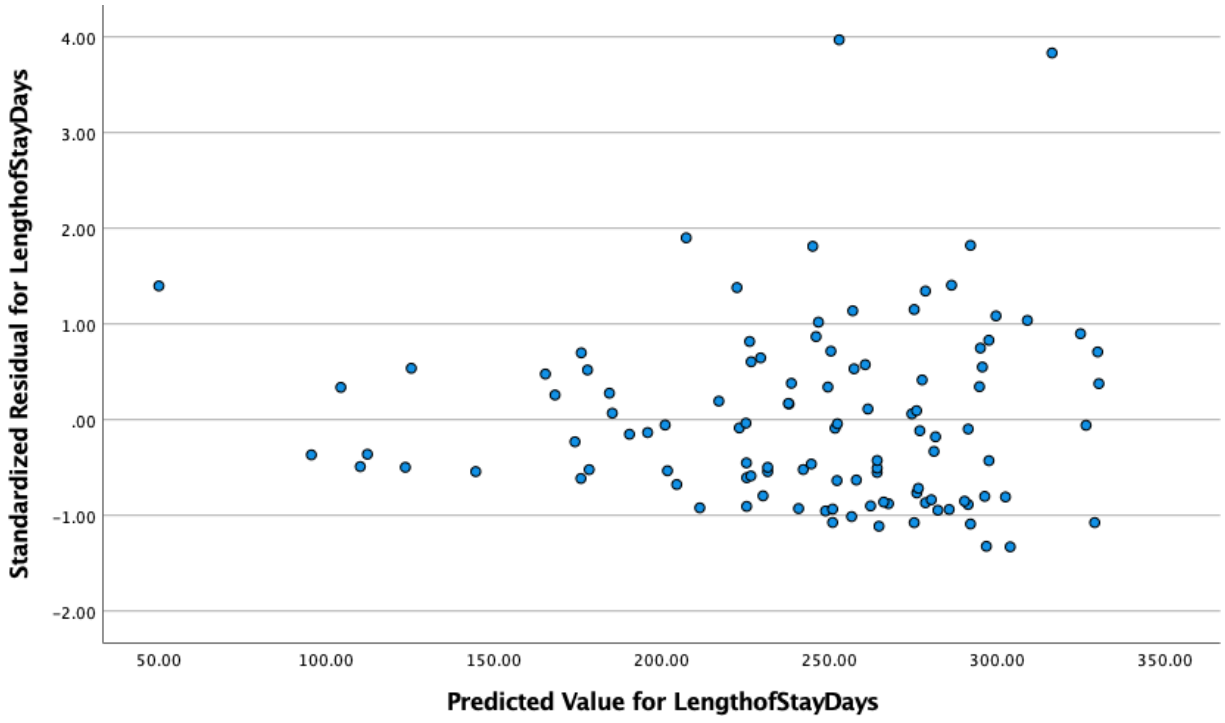
Descriptives for Continuous Study Variables

Variable	*N*	Min	Max	*M*	*SD*	Skewness		Kurtosis	
						Stat	*SE*	Stat	*SE*
Length stay	433	0	1228	160.24	196.44	2.14	0.12	5.79	0.23
Age	433	20	63	34.94	8.64	0.88	0.12	0.37	0.23

I first conducted assumptions of analysis of covariance (ANCOVA) to address RQ2. First, tests for homoscedasticity produced a scatterplot of standardized residuals against unstandardized predicted values of length of stay. A visual inspection of the scatterplot showed variance was equal for all values of the length of stay (see Figure 1).

Figure 1

Scatterplot of Standardized Residuals Against the Unstandardized Predicted Values for RQ2

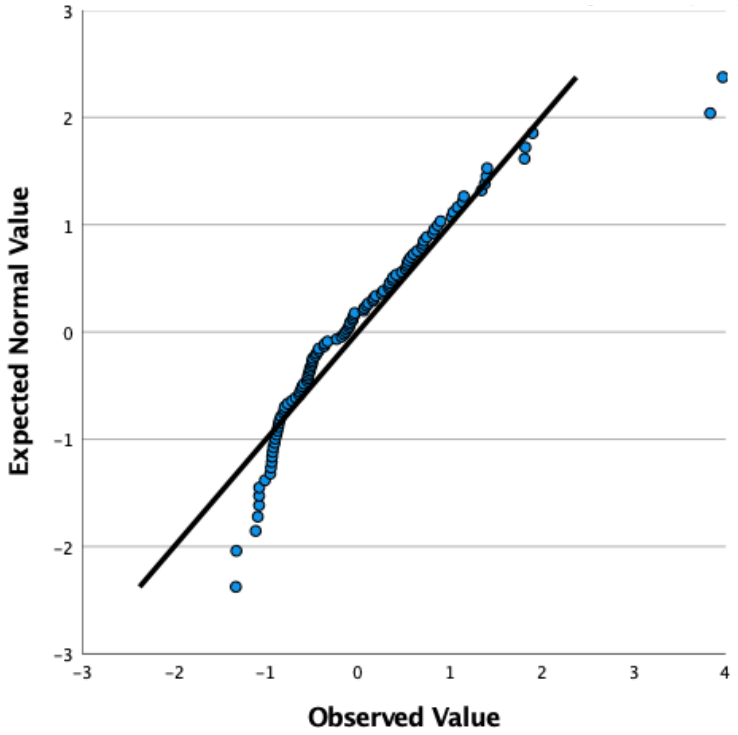


Second, a normal Q-Q plot of the standardized residuals was created from the ANCOVA analysis to test the normality of residuals. A visual inspection of the Q-Q plot showed the

assumption of normality was not violated as residuals were normally distributed (see Figure 2). Third, I conducted a Levene's test for equality of variances to test for the homogeneity of variances. The assumption of homogeneity of variances was not violated (p = .71).

Figure 2

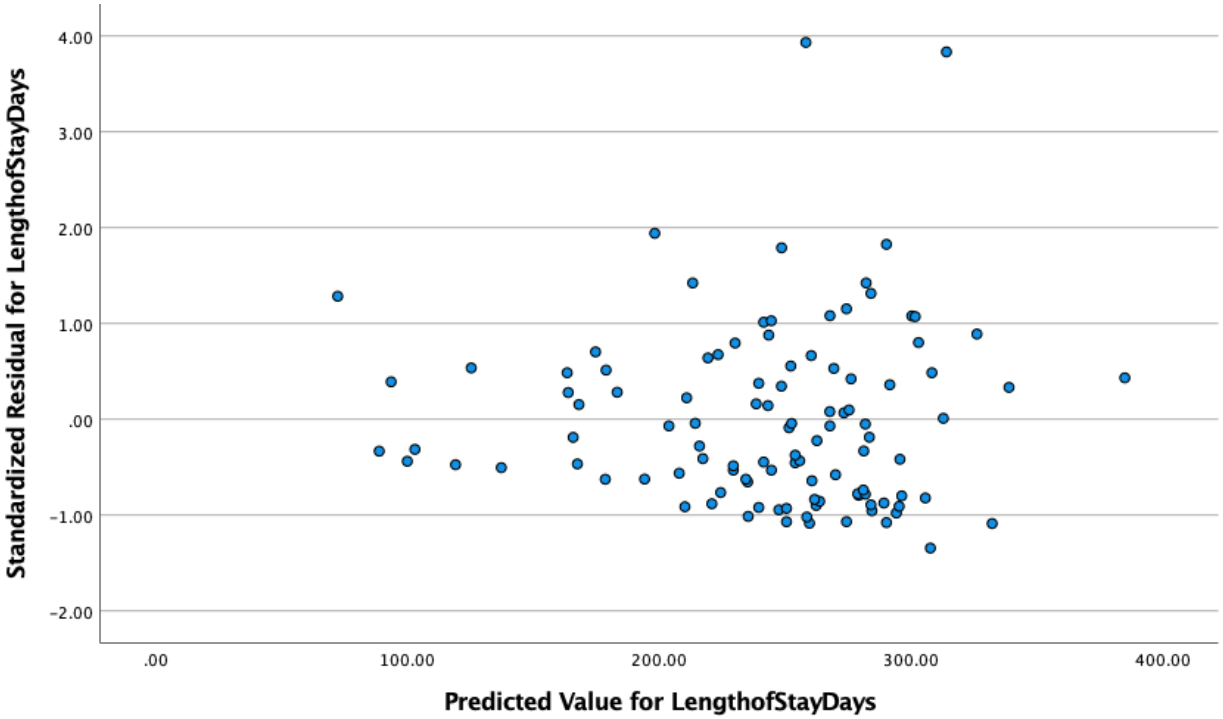
Normal Q-Q Plot of Standardized Residuals for Regression Analysis for RQ2



Several steps were taken to test assumptions for three-way ANCOVA to address RQ3. First, a test of homoscedasticity was conducted via a scatterplot of standardized residuals plotted against unstandardized predicted values of length of stay. A visual inspection of the scatterplot showed variance was equal for all values of the predicted dependent variable (see Figure 3).

Figure 3

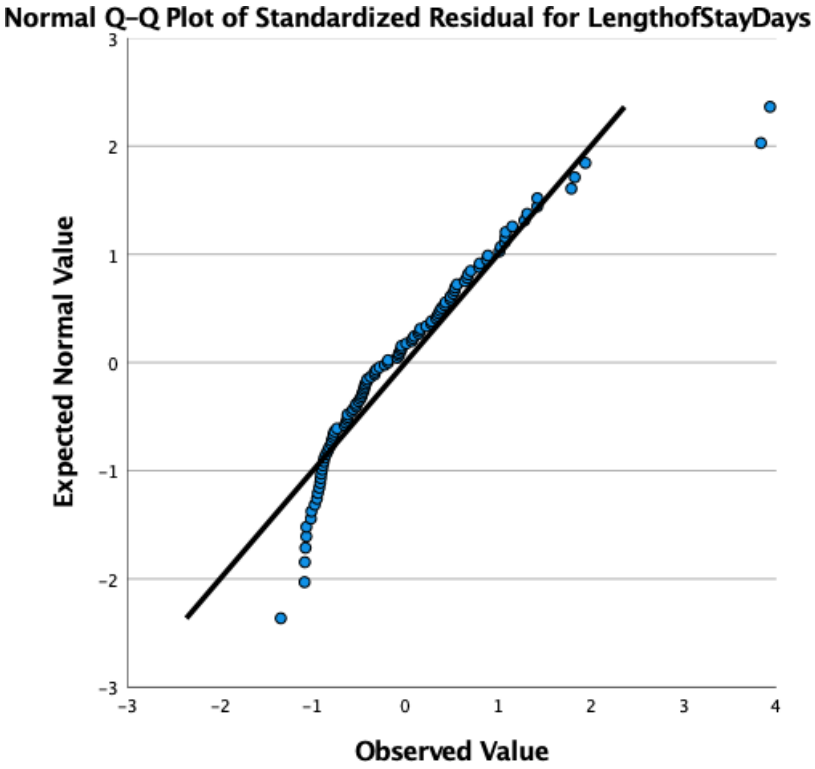
Scatterplot of Standardized Residuals Against the Unstandardized Predicted Values for RQ3



Second, a test of the normality of residuals was conducted. A normal Q-Q plot of standardized residuals from ANCOVA analysis was generated. A visual inspection of the Q-Q plot showed the assumption of normality was not violated (see Figure 4) as residuals were normally distributed. Third, I conducted a Levene's test of equality of variances to test the homogeneity of variances. The assumption of homogeneity of variances was not violated (p = .78).

Figure 4

Normal Q-Q Plot of Standardized Residuals for Regression Analysis for RQ3



Primary Analyses

Hypothesis 1 posited there would be a difference in length of stay between groups receiving buprenorphine/naloxone compared to Vivitrol.

- Null Hypothesis: There is no significant difference in length of stay between the two MAT types.
- Alternative Hypothesis: There is a significant difference in length of stay between the two MAT types. Buprenorphine would have a shorter length of stay compared to Vivitrol when controlling for length of stay.

RQ1: During inpatient MAT treatment for OUD, is there a difference between treatments using buprenorphine/naloxone and those using Vivitrol in the length of stay of patients?

$H_0$1: There will be no significant differences in length of stay between groups receiving two MAT types: buprenorphine/Naloxone and Vivitrol.

H_a1: There will be a significant difference in length of stay between buprenorphine/Naloxone and Vivitrol.

To test this hypothesis, I conducted an independent samples *t*-test with the length of stay as the dependent variable and MAT type as the grouping variable. Levene's test for equality of variances was conducted to examine whether variances in the dependent variable were equal in both groups based on MAT type. Because the assumption of homogeneity of variances was not violated (p = .50), a correction was not needed. Participants administered some form of buprenorphine (M = 252.60, SD = 200.16) did not stay significantly longer than participants administered Vivitrol (M = 273.25, SD = 241.47; $t(112) = -0.48$, p = .63, Cohen's d = -.10). Hypothesis 2 posited there would be a difference in the average length of stay between MAT groups when controlling for demographic variables (i.e., age, employment status, sex, race, ethnicity, living arrangement, DSM disorder, year data was collected).

RQ2: Is there a difference in these two MAT (buprenorphine and Vivitrol) outcomes when controlling for demographic variables of patients with OUD?

$H_0$2: There is not a significant difference in the average length of stay between MAT groups when controlling for demographic variables.

H_a2: Alternative hypothesis: There is a significant difference in the average length of stay between MAT groups when controlling for demographic variables. Buprenorphine would have a shorter length of stay compared to Vivitrol when controlling for length of stay.

To test this hypothesis, I conducted an ANCOVA predicting length of stay from MAT type controlling for demographic variables. First, it is important to mention demographic

variables did not significantly predict the length of stay (see Table 3). The overall model did not account for significant variation in length of stay ($F(12, 94) = .67$, $p = .78$, partial $\eta 2 = .08$). Additionally, MAT type did not significantly predict length of stay when controlling for demographic predictors ($F(1, 94) = 0.02$, $p = .97$, partial $\eta 2 = .00$.

Table 3

Between-Subjects Effects of Predictors for RQ2

Model 1	Type III SS	*df*	MS	*F*	*p*	Partial η^2
Corrected Model	322577.61	12	26881.47	0.67	0.78	0.08
Intercept	102306.67	1	102306.67	2.55	0.11	0.03
Age	2696.53	1	2696.53	0.07	0.80	0.00
Living	57214.37	2	28607.18	0.71	0.49	0.02
Employment	11250.29	1	11250.29	0.28	0.60	0.00
DSMVDx	140609.14	2	70304.57	1.75	0.18	0.04
Sex01	43030.54	1	43030.54	1.07	0.30	0.01
Race	22446.74	2	11223.37	0.28	0.76	0.01
Ethnicity	6040.96	1	6040.96	0.15	0.70	0.00
MAT	71.89	1	71.89	0.00	0.97	0.00
Year	14712.46	1	14712.46	0.37	0.55	0.00
Error	3769194.75	94	40097.82			
Total	10432878.00	107				

Hypothesis 3 posited that ethnicity would change the relationship between MAT type and length of stay when controlling for demographic variables (i.e., age, employment status, sex, race, race, living arrangement, DSM diagnosis, year data was collected). This was a moderation analysis that was intended to test ethnicity as a moderator on the relationship between MAT treatment and length of stay. My prediction was that I did not think that ethnicity would change the relationship between MAT type and length of stay when controlling for demographic variables. I predicted that all ethnicities (Hispanic and Non-Hispanic) that were being administered buprenorphine would have a shorter stay, because buprenorphine is an opioid agonist and protects against overdose, which decrease the chances of death. Vivitrol is an extended-release opioid agonist that is administered as a monthly injection.

RQ3: Does ethnicity moderate the relationship in MAT types and the length of stay among patients with OUD?

$H_0$3: Ethnicity does not change the relationship between MAT type and length of stay when controlling for demographic variables.

H_a3: Ethnicity does change the relationship between MAT type and length of stay when controlling for demographic variables. Non-Hispanics taking buprenorphine had the shortest length of stay.

To test this hypothesis, I conducted a three-way ANCOVA. First, two MAT treatment levels (i.e., buprenorphine/naloxone (consisting of buprenorphine, buprenorphine-naloxone, naloxone, and sublocade) and, (b) Vivitrol (consisting of naltrexone, naltrexone injection, extended-release, and Vivitrol injection), and two ethnicity levels (i.e., Hispanic and Non-Hispanic) were entered into the model as independent variables. Second, an interaction term between ethnicity and MAT treatment levels was created and entered into the model. Third, length of stay was entered as the dependent variable. Finally, demographic variables were entered as control variables including age, employment status, sex, race, living arrangement, opioid use severity and year collected.

The overall model did not account for significant variation in length of stay ($F(13, 93) = .66$, $p = 0.80$, partial $\eta^2 = 0.08$). Ethnicity did not moderate the relationship between MAT type and length of stay ($F(1, 93) = .51$, $p = .91$, partial $\eta^2 = .001$; see Table 4).

Table 4

Between-Subjects Effects of Predictors for RQ3

Model 1	Type III SS	*df*	*MS*	*F*	*p*	Partial η^2
Corrected Model	343148.19	13	26396.02	0.66	.80	0.08
Intercept	89060.25	1	89060.25	2.21	.14	0.02
Age	5369.40	1	5369.40	0.13	.72	0.00
Living	54701.48	2	27350.74	0.68	.51	0.01
Employment	17681.29	1	17681.29	0.44	.51	0.01
DSMVDx	156105.48	2	78052.74	1.94	.15	0.04
Sex01	41405.91	1	41405.91	1.03	.31	0.01
Race	7706.40	2	3853.20	0.10	.91	0.00
Ethnicity	2822.42	1	2822.42	0.07	.79	0.00
MAT	16991.61	1	16991.61	0.42	.52	0.01
Year	15494.53	1	15494.53	0.38	.54	0.00
Ethnicity*MAT	20570.59	1	20570.59	0.51	.48	0.01
Error	3748624.16	93	40307.79			
Total	10432878.00	107				

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this study was to examine current practice for OUD treatment and investigate if there was a difference in MAT treatments (buprenorphine/naloxone and Vivitrol) based on demographic variables, ethnicity, and the length of stay among patients with OUD. This chapter presents a discussion of the findings based on differences in the length of stay between two different MATs in an inpatient drug treatment facility for individuals with OUD: (a) buprenorphine/naloxone (consisting of buprenorphine, buprenorphine-naloxone, naloxone, and sublocade) and, (b) Vivitrol (consisting of naltrexone, naltrexone injection, extended-release, and Vivitrol injection).

Study findings showed that of the 433 total participants in the study, 114 received some type of MAT treatment. Most of these participants were White, non-Hispanic men. Over half of the participants lived with family and the other half lived with nonrelatives. Two-thirds of participants were unemployed, and most of them suffered from a DSM diagnosis. Of the 433 participants, 78 were administered some kind of buprenorphine, and 36 were administered Vivitrol. Length of stay and age were both normally distributed (see Table 1).

Recommendations

The recommendations for future research would be to improve the education and training for healthcare professionals about providing MATs to OUD patients, finding the benefits, and how to provide follow-up treatment for medication and behavioral health compliance. In the case of COVID or if another pandemic arises, medical professionals should be equipped with the resources that could benefit individuals suffering from OUD, their mental or behavioral health issues, and the medical services they are provided. Another recommendation would be to

conduct a qualitative study so that researchers could have physical contact with the patients and staff for interviews, interaction, and observe how services are provided.

The finding that there is no significant difference in length of stay between two MAT types buprenorphine and Vivitrol is consistent with previous work. According to Klein and Seppala (2019), patients in treatment programs initiated in a residential or day treatment setting with outpatient follow-up (one and six months) who reported compliance with their medicines following treatment had significantly higher abstinence rates than patients who reported noncompliance. Postdischarge relapse was associated neither with medication use nor was compliance primarily related to a change in the frequency of alcohol or drug use. The research concluded that it is beneficial to administer medications, including partial opioid agonists like buprenorphine, within the context of program-based treatment, and taking these medications as prescribed is associated with favorable outcomes (Klein, & Seppala, 2019).

The finding that there is no difference in the average length of stay between MAT groups when controlling for demographic variables is also consistent with past work. It is consistent because, according to Presnall et al. (2019), buprenorphine treatment in office-based medical settings was even more effective in reducing these adverse outcomes. They recommended expanding access to buprenorphine in all environments, but particularly in office-based medical settings and through Medicaid for the best potential for patient retention. Expansion of the grant-funded OUD treatment network to office-based medical settings would give uninsured patients access to the growing network of office-based providers that serve Medicaid beneficiaries (Presnall et al., 2019).

Because some researchers have demonstrated that ethnicity does change the relationship between MAT type and length of stay when controlling for demographic variables, my findings

were inconsistent with past work According to Stahler & Mennis (2018), it was found through data obtained from the Treatment Episode Dataset-Discharges (TEDS-D) regarding geographical variations and ethnicity to see if they played a role in completing inpatient MAT treatment with individuals with OUD. It was found that 28% of clients were successful in completing the treatment and that among those clients, Hispanics were less likely to complete the treatment (Stahler & Mennis, 2018). The study also found that there is a need for improving inpatient treatment for those that have medical needs in smaller geographical areas (Stahler & Mennis, 2018).

Limitations

There were some limitations while trying to research my DNP project. One of the main obstacles was COVID-19. COVID-19 prohibited me from actually going to the facility to physically meet the healthcare professionals and faculty that provide such dedicated care for these individuals suffering from OUD. In addition, this was not a true experiment, because I could not randomly assign who received which type of medication, so I cannot establish causality as it might have been that certain factors necessitated some patients to have one type of treatment over the other. This prohibited me from finding what I predicted. Because of the limited sample size of some of the MAT subtypes, I was unable to test differences between the types of administration for buprenorphine, which may have also made it harder for my prediction.

Conclusion

OUD continues to be an epidemic in the United States and a total of 128 victims continue to die daily due to opioid overdose (NIH, 2020). The abuse of and reliance on opioids, including

pain relievers, heroin, and synthetic opioids (e.g., fentanyl), is a severe crisis impacting public health and social and financial government assistance equally.

OUD facilities continue to provide effective treatment for individuals that suffer from OUD. One treatment commonly used for individuals with OUD used is MAT: (a) buprenorphine/naloxone and (b) extended-release naltrexone (Vivitrol). MAT is used to assist patients in the addiction recovery process. MAT is the use of medications in conjunction with counseling and behavioral therapies and is powerful for treating OUD and assisting individuals with recovery (FDA, 2020).

This DNP project focused on the number of patients who sustained recovery across their length of stay. The director of the facility where I conducted the research expressed her interest in and dedication to alleviating this epidemic, and thus offered support for the project to improve the services they provide to the individuals they serve. The role of the team members (i.e., nurses, physicians, counselors) fighting OUD is tremendously complex. The ability to implement the MAT program and experience the benefits is rewarding to the health care team, the patients, and their families. Further education is needed to assist in the fight against this deadly epidemic.

EBP Findings and Relationship to DNP Essentials 1–8

Upon completing this doctorate project, it revealed the competence of the eight DNP Essentials for advanced practice nursing. This section conveys the EBP of meeting each of the eight essentials according to the Essentials of Doctoral Education for Advanced Nursing Practice (American Association of Colleges of Nursing, 2006).

Essential I: Scientific Underpinnings for Practice

A retrospective study based on the scientific underpinnings supported this DNP project's preparation, implementation, and analysis. The retrospective study explored the roles of

physicians, nurses, behavioral therapists, peer support specialists, and discharge planners in the techniques, research approach, and strategies that provided new insight into patients' functional recovery sustainability while in inpatient facilities and understanding why patients relapse and return to drug treatment facilities.

Essential II: Organization and Systems Leadership for Quality Improvement and Systems Thinking

This study analyzed the different lengths of stay between groups of patients with OUD receiving oral buprenorphine, subcutaneous buprenorphine, and Vivitrol in the treatment facility, and the number of patients who sustain recovery during their length of stay. I collaborated with the senior vice president of operations to obtain my information. She was there to answer any questions I had because they were interested in treating OUD and providing patient care and support within the organization. I obtained IRB approval from the organization and Abilene Christian University.

Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice

In the literature review, I compared current practices and research into medication regimes and lengths of stay within a treatment facility with patients with OUD. Research for this DNP project showed it to be an evidence-based intervention to increase knowledge of the effectiveness of the MAT program. Using this study's methodologies and data analysis, clinical competence in evaluating MAT is evidence-based.

Essential IV: Information Systems/Technology and Patient Care Technology for the Improvement andTtransformation of Health Care

Retrospective data was utilized and evaluated to analyze patients' quality of care through the MAT treatment program and its effectiveness compared with the OUD patients length of stay

for treatment. Having the ability to obtain information from a technological system and analyze it for the competence of OUD treatment demonstrates competence in meeting DNP Essential IV.

Essential V: Health Care Policy and Advocacy in Health Care

While completing this DNP project, I had to understand that the OUD population is a protected population. According to federal disability law, individuals addicted to opioids fall under Section 504 of the Rehabilitation Act, the Americans with Disabilities Act, and Section 1557 of the Affordable Care Act (HHS, 2018). MAT is also included in this federal law because MAT is administered under the supervision of a health care professional.

Essential VI: Interprofessional Collaboration for Improving Patient and Population Health Outcomes

This DNP project required effective interprofessional communication and collaboration in helping patients with OUD have better health outcomes. Meeting with the vice president of the organization via Zoom was effective. Collaborating and understanding the implementation process for the use of MAT through continued education for quality patient care was also effective.

Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health

This DNP project required the need for and understanding of evidence-based guidance for OUD and MAT treatment to provide quality patient care with those suffering from OUD. An analysis of the increasing OUD deaths is causing an impact on society, so there is a need to gain knowledge regarding preventative treatments for OUD.

Essential VIII: Advanced Nursing Practice

Through research and education, I implemented this DNP project. The MAT treatment facility is supportive in achieving its excellence in OUD and providing treatment for those in

need of assistance. Their knowledge of MAT treatment has raised the standards of healthcare professionals and leaders for better patient outcomes.

Again, OUD continues to be an epidemic in the United States victims dying daily due to opioid overdose (NIH, 2020). As a healthcare professional that has encountered this epidemic on a personal and professional level, I feel that my role is to continue to find evidence-based information to assist in fighting this crisis.

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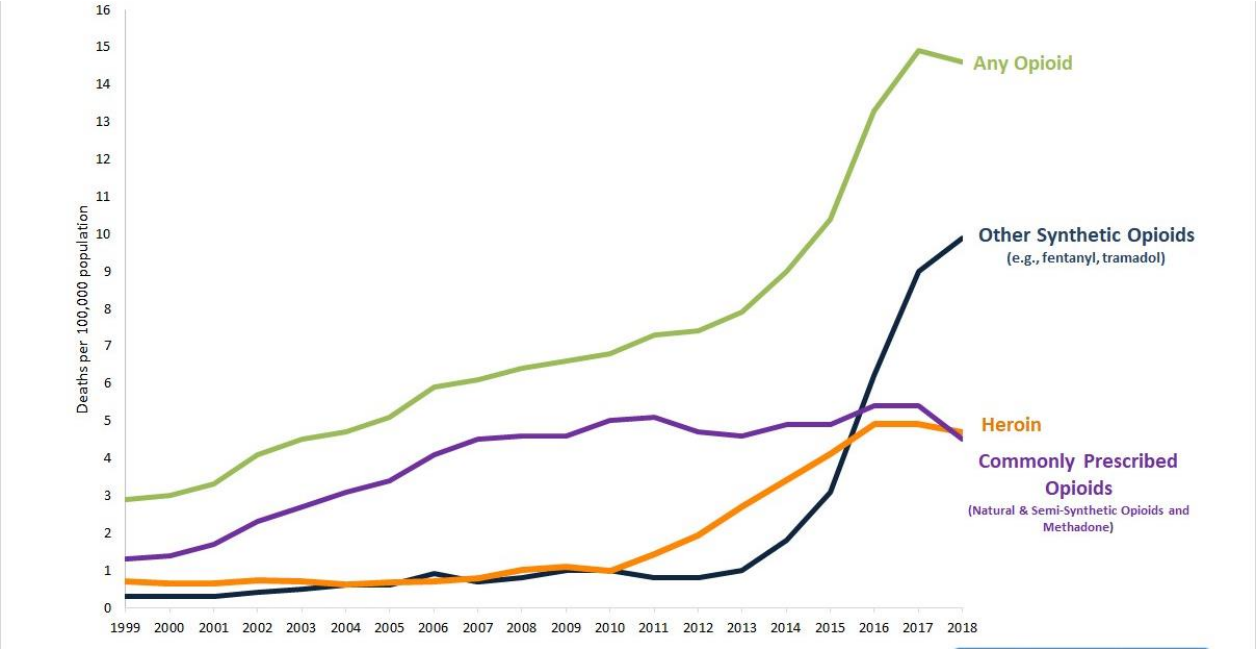
Appendix A: Death Statistics

Figure A1

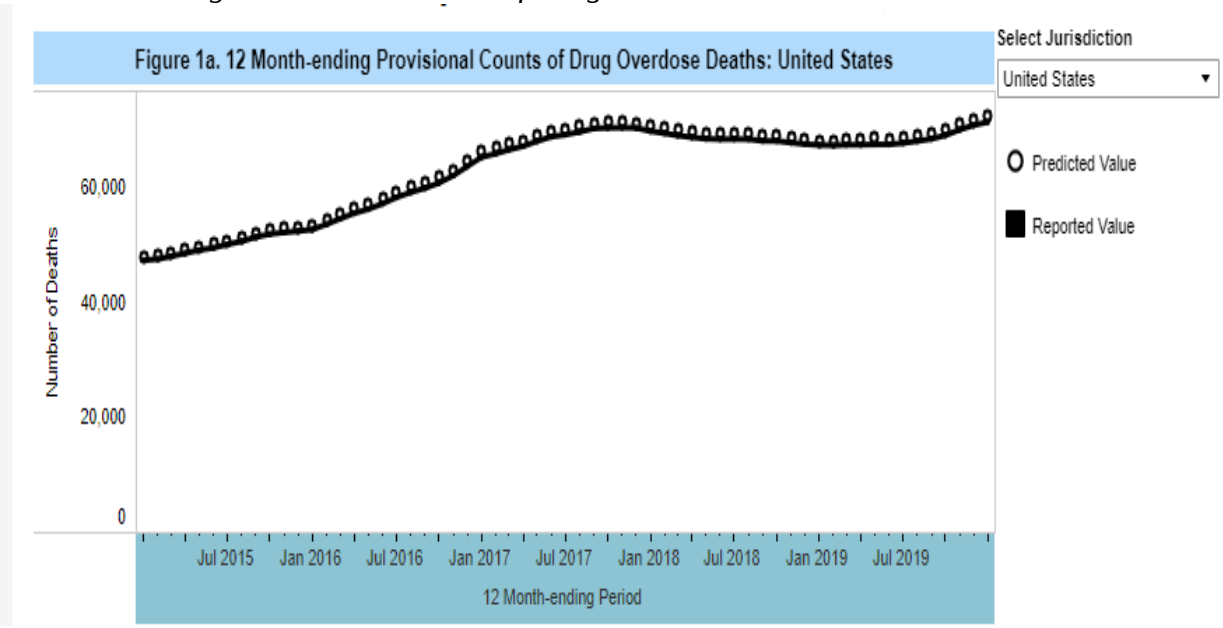
Overdose Death Rates Involving Opioids, by Type in the United States Between 1999 and 2018



Note. Adapted from Center for Disease Control and Prevention, by the National Center for Health Statistics, 2020 (https://www.cdc.gov/nchs/data/databriefs/db356-h.pdf). In the public domain.

Figure A2

12 Month-Ending Provisional Number of Drug Overdose Deaths



Note. Adapted from Center for Disease Control and Prevention, by the National Center for Health Statistics, 2020 (https://www.cdc.gov/nchs/health_policy/Provisional-Drug-Overdose-Deaths-Counts-and-Rates-by-County-2019.pdf). In the public domain.

Appendix B: Project Timeline and Task List

Table B1

Project Timeline and Task List

January	Met with VP of Operations at treatment facility and they accept me to research Project
February-March	IRB Approved / Received Data Sets
April	Revised Research Questions/ Focused on Literature Review
May - July	Data Analysis is Complete
August - September	Final Defense
October-November	Final Editing/Submit project for Publishing/ Editorial Review
December	Graduation

Task	Jan.	Feb.	Mar.	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
Met with VP of Operations at treatment facility and they accept me to research project												
IRB Approved / Received data sets												
Revised research questions												
Focused on Literature Review												
Data analysis completed and												
charts and grids made and												
added to DNP project												
Final Defense												
Final editing /submit the project for												
publishing												
Editorial review												
Graduation												

Appendix C: IRB Approval

ABILENE CHRISTIAN UNIVERSITY
Educating Students for Christian Service and Leadership Throughout the World

Office of Research and Sponsored Programs
320 Hardin Administration Building, ACU Box 29103, Abilene, Texas 79699-9103
325-674-2885

February 8, 2021

Evangella Harville
Department of Nursing
Abilene Christian
University

Dear Evangella,

On behalf of the Institutional Review Board, I am pleased to inform you that your project titled "Opioid Use Disorder: A Crisis in the State New York",

(IRB# 21-002)is exempt from review under Federal Policy for the Protection of Human Subjects.

If at any time the details of this project change, please resubmit to the IRB so the committee can determine whether or not the exempt status is still applicable.

I wish you well with

your work. Sincerely,

Megan Roth, Ph.D.
Director of Research and Sponsored Programs