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Advanced Practice Registered Nurses Expanding Treatment for Opioid Use Disorder With Buprenorphine

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

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2022

Abstract

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With Buprenorphine

by

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MS, Walden University, 2020

BS, University of Cincinnati, 2018

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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May 2022

Abstract

The practice problem this doctoral project addressed was the misuse of opiates and the alarming number of intentional and unintentional overdose deaths that occur yearly as a result. The practice-focused question was the following: Providing education on the use of the medication-assisted treatment (MAT) protocol to advanced practice registered nurses (APRNs) in this practice setting will increase both knowledge and confidence in using the MAT protocol? The health belief model and The Johns Hopkins nursing evidence-based practice model were used as the framework for this project. The health belief model was used to explain and predict an individual's behavior surrounding their health to change their perception of their disorder and embrace effective strategies to decrease the occurrence. The Johns Hopkins nursing evidence-based practice model was used to appraise the strength of evidence of the articles. Scholarly peer-reviewed journal articles published within the past 5 years were obtained from four databases to support this doctoral project. Pretest, posttest, and survey data were collected from three APRNs at the practice site. Findings indicated APRNs' knowledge and confidence level increased after the conclusion of the education and training, as evidenced by each APRN scoring a 95% or better on the posttest. The average knowledge assessment pretest score was a 63%, and the average knowledge assessment posttest score was 96%, an increase of 33% after buprenorphine education and training. A recommendation is to include buprenorphine education and training to APRNs when they join this practice to decrease morbidity and mortality rates related to opioid use disorder.

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Dedication

I would like to thank my Lord and Savior Jesus Christ for the strength, endurance, and willpower needed to complete this personal goal.

A heartfelt thank you to my mother, Glynda; my sisters, Tammie, LaTausha, and Tomika; and to my wonderful children who are my everything, Frederick, and Madison. I would like to thank each one of you for your love, support, and understanding throughout my collegiate years.

Thank you all for understanding my need to be connected to my books and keyboard for the last few years. You unwavering love, support, and encouragement helped get me to the finish line.

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I would like to acknowledge and thank Dr. Julibeth Lauren, committee chair, and Dr. Rosaline Olade, committee member, for their support for the completion of my DNP project. Your great feedback and nudging pushed me to tap into areas of my writing and research not yet developed.

I would also like to thank my preceptor, Andrea Young, PMHNP, for pouring into me with learning opportunities and support during the completion of my DNP practicum.

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Section 1: Nature of the Project

Intentional and unintentional overdoses resulting in death is a public health problem related to opioid use (Olfson et al., 2019). Opioid overdoses result in over 120,000 deaths each year worldwide (Dydyk et al., 2020). In the first 3 months of 2020, an estimated 19,416 individuals died of an overdose, with opioids being the chief driver of the drug overdose fatalities (Stephenson, 2020). These alarming death rates indicated the need for increased efforts for advanced practice registered nurses (APRNs) to have a greater impact in being part of the solution in reducing opioid related overdoses.

The misuse of opioids is a serious national health crisis. Research indicated opioid drug use and hepatitis C (HCV) infection are two related epidemics (McClure et al., 2019). With injection drug use being the primary risk factor for HCV infection, reducing opioid drug use can also help reduce new HCV rates.

The current project included a pretest and posttest that covered buprenorphine, an educational pamphlet, and a simulated buprenorphine induction. Additionally, scholarly peer-reviewed articles and resources from Substance Abuse and Mental Health Services (SAMHSA), which is an agency within the U.S. Department of Health and Human Services Administration, and Providers Clinical Support System (PCSS), a program funded by SAMHSA, were included to equip the APRNs with a platform to increase their knowledge and skills in prescribing buprenorphine. These resources were used to create and implement a training program that allowed the APRNs to receive education and complete the required 24-hours of training and testing to earn their certification as a buprenorphine waivered practitioner. The goal of this project was to increase the

knowledge and confidence of APRNs in using the buprenorphine medication-assisted treatment (MAT) protocol with patients who meet the criteria. Findings may effect social change by helping APRNs provide individuals with opioid use disorder with a safe, evidence-based treatment that can help them reduce cravings and opioid use, leading to reduced mortality and a quality, opioid-free life.

Problem Statement

The local nursing practice problem this project addressed was the lack of knowledge and confidence in using the MAT by the APRNs at the project site. MAT is the use of buprenorphine, methadone, or naltrexone medications and counseling for the treatment of opioid use disorder. This project focused solely on the use of buprenorphine. Nurse practitioners were granted the authority to help fill the gap of prescribing MAT for opioid use by the Comprehensive Addiction and Recovery Act in July 2016 (Moore, 2019).

However, the nurse manager at the project site reported that the APRNs in this primary care setting were not using MAT that was approved by the Food and Drug Administration for the treatment of opioid use disorder (personal communication, n.d.). The requirements for APRNs to earn a certification as a MAT provider are to complete 24 hours of training. This project included instructions to access the website that contained the training webinars, case studies, and a pretest and posttest focusing on buprenorphine and simulated buprenorphine induction. I served the role as the patient and created an educational pamphlet to promote additional buprenorphine knowledge and

hands-on simulated exercises so APRNs could demonstrate preparedness for MAT induction, stabilization, and maintenance protocol.

After the APRN successfully completed the posttest and survey, a MAT waiver certification was issued from American Psychiatric Nurses Association. The MAT waiver allows the APRNs to treat up to 30 patients during their first year. After 1 year, the APRN may apply to increase their patient limit to 100 patients. If the APRN continues to meet criteria, they can apply to have the number of patients they treat increased to the maximum of 275 patients. The purpose of using MAT for opioid use disorder is to help reduce opioid cravings with the goal of reducing mortality rates due to opioid use. An evidence-based educational guide that outlined step-by-step instructions for initiating buprenorphine treatment to assist with reducing cravings and leading to a decrease in opiate use was provided.

The supporting evidence that justified the project and established relevance to this organization was the national health care crisis that existed regarding opioid-related deaths. The significance of this project to nursing practice is the potential for reducing opioid-related overdoses in this primary care clinic and the potential for dissemination to similar patient populations. Over 2.1 million people in the United States and 16 million people worldwide are living with opioid use disorder (Dydyk et al., 2020). Globally, the number of deaths is over 120,000 each year due to opioid use (Dydyk et al., 2020). In addition, the local relevance of this project was supported by Ohio having the second highest rate of overdose in the United States in 2017 (Li et al., 2019). Opioid-related overdoses continue to occur due to the increase of fentanyl use. The Hamilton County

Addiction Response Coalition (2021), showed that 432 overdoses occurred in 2020. Buprenorphine prevents withdrawal and cravings and stabilizes opioid receptors by acting as a long-acting agonist (Velander, 2018).

Purpose Statement

The purpose of this capstone project was to increase the APRNs' knowledge and confidence in using the buprenorphine MAT protocol by providing education, training, and practical simulation exercises with me playing the role of a patient for buprenorphine induction, stabilization, and maintenance. This project contributed to APRNs' requirements for earning certification as a MAT provider, which allowed them to incorporate a safe and evidence-based buprenorphine MAT into the treatment plan for patients with opioid use disorder. The goal was reducing misuse of opioids for clients in this primary care setting. Increased integration of MAT for opioid use disorder can increase access to treatment for this condition (Korthuis et al., 2017).

The gap in nursing practice was the lack of APRNs using the evidence-based buprenorphine MAT to treat opioid use disorder (Mancher & Leshner, 2019). With opioid use disorder being the deadliest drug crisis in U.S. history (Salmond & Allread, 2019), it was important for APRNs to become educated and comfortable with helping to mitigate the opioid overdose epidemic. There are over 248,000 licensed nurse practitioners throughout the United States who could help fill the void by becoming trained qualified MAT providers (Moore, 2019).

The practice focused question for this project was the following: Does providing education on the use of the MAT protocol to APRNs in this practice setting increase both

knowledge and confidence in using the MAT protocol? The goal of this doctoral project was to increase the APRNs' knowledge and confidence with using the MAP protocol. Increased use of this evidence-based protocol may improve patient outcomes and decrease morbidity and mortality related to opioid use disorder. This project has the potential to reduce deaths related to misuse of opioids by increasing the APRNs' treatment options to include an evidence-based protocol for patients with opioid use disorder. Research has indicated the safe use of medications for opioid use disorder can facilitate recovery (Hoffman et al., 2019).

Nature of the Doctoral Project

Opioid use disorder is a chronic disorder conventionally treated with psychotherapy as well as pharmacological treatment such as an opioid agonist methadone, a partial agonist buprenorphine, or an opioid antagonist naltrexone (Hoffman et al., 2019). The goal of treatment is to help reduce opioid cravings with the assistance of MAT in conjunction with psychotherapy to address the issues at the core of the individual's illicit drug use. Opioid use disorder is complicated due to the dual diagnosis that exists in many patients who are dealing with psychiatric, psychosocial, and socioeconomic challenges such as a history of incarceration, homelessness, and unemployment (Truong et al., 2021). Increasing the use of buprenorphine for the treatment of opioid use disorder can help reduce opioid use by decreasing cravings due to buprenorphine acting on the same receptors in the brain as opioids, without making the individual feel high, and allowing the brain to recover while the individual works on

achieving sobriety (American Psychiatric Association, 2021). Buprenorphine targets mu opioid receptors in the brain by reducing withdrawal and craving (Wang, 2019).

Articles that supported this project were acquired from CINAHL, Cochrane Library, PubMed, and PsychINFO databases. The search of the databases targeted evidence-based articles using the following keywords: *buprenorphine*, *opioid use disorder*, and *medication assisted therapy*. Scholarly peer-reviewed journal articles published within the past 5 years were selected in an effort to obtain the most current research findings. After compiling the evidence-based articles, I conducted a literature review using the findings to create educational materials to share with the APRNs in the practicum site.

The nature of this doctoral project that addressed the gap in practice was to use scholarly evidence-based articles to support the effectiveness of buprenorphine for the treatment of opioid use disorder. Findings from the articles were used to develop educational materials to increase the APRNs' knowledge and confidence in the use of buprenorphine MAT. Increased knowledge and confidence were measured by comparing knowledge assessment scores prior to the training and after the training by asking the same questions and on the pretest and posttest, as well as the use of a posttraining survey that allowed the APRNs to share their opinion of the education and training.

Articles to support this doctoral project were published within the past 5 years, were written in English, and pertained to buprenorphine treatment. I created a systematic review table (see Appendix A) to display the findings from the articles in an organized

manner. Assessing the articles in a systematic fashion allowed me to examine the validity of sources by rating the level of evidence.

A literature search was conducted to locate sources to support the purpose of this doctoral project addressing the gap in practice of the APRNs at the practice site not including buprenorphine as a treatment option. I included articles addressing the effectiveness of buprenorphine and the APRNs' impact on treating opioid use disorder with buprenorphine MAT. The literature search included scholarly articles obtained from CINHAL, Cochrane Library, PubMed, and PsychINFO, which were analyzed to ensure they met the criteria to address the gap in practice and to disseminate to the APRNs during education and training.

<p align="center">**Significance**</p>

The target population for this project included three APRNs in the primary care setting. The objective of my project was to have a positive impact by educating the APRNs on the evidence-based effectiveness of MAT for treating opioid use disorder by providing APRNs with an effective treatment option. Using a maintenance medication has proven to be effective for reducing cravings (Kakko et al., 2019). Buprenorphine treatments provide safe and rapid treatment for opioid cravings (Ahmadi et al., 2018).

This doctoral project has the potential to increase the nursing body of knowledge and improve nursing practice through the use of buprenorphine in this primary care setting and similar practices in the surrounding area. The APRNs in this site may increase their awareness of this evidence-based treatment option through networking, collaboration, and dissemination of information with other practitioners, with the goal of

decreased morbidity and mortality rates resulting from opioid overdose. Providing a safe and effective treatment for the management of opioid cravings may provide practitioners with an additional treatment option with the goal of helping individuals live healthy and productive lives free from the misuse of opioids.

This doctoral project has potential implications for positive social change by sharing an evidence-based treatment method with proven effectiveness that has the potential to save and change lives for the better. In addition, this project has the potential to help with reducing the stigma of addiction by providing treatment that allows an individual to achieve sobriety in the comfort of their home. Stigma has undermined the wider distribution of overdose education in the community (Tsai et al., 2019). Promoting improved health through the use of an evidence-based treatment may positively impact society by proving safe and effective treatment to individuals and improving their quality of life.

Summary

In this section, opioid use disorder was recognized as a public health problem resulting in over 120,000 deaths worldwide every year. Although there are effective treatment modalities for opioid use disorder, including psychotherapy, methadone, buprenorphine, and naltrexone, the APRNs in this primary care setting had not been using them. The goal of this doctoral project was to provide education, training, and resources that will allow the APRNs to earn their certification as a MAT provider, to help with effective treatment for individuals with opioid use disorder, to decrease morbidity and mortality rates related to opioid use, and to positively impact social change by

helping reduce the stigma of addiction and improve the quality of life of those with

opioid use disorder. Section 2 introduces the conceptual model, which was the

foundation for this doctoral project, addresses the relevance of this project to nursing

practice, and includes my role as the doctor or nursing practice (DNP) student as well as

the role of the project team.

Section 2: Background and Context

The misuse of opioids is a local and public health problem affecting over 2.1 million people living in the United States. The practice-focused question for this project was the following: Does providing education on the use of the MAT protocol to APRNs in this practice setting increase both knowledge and confidence in using the MAT protocol? Intentional and unintentional drug overdoses related to opioids result in over 120,000 death each year worldwide. The purpose of this project was to use resources from SAMHSA (an agency within the U.S. Department of Health and Human Services Administration) and PCSS (a program funded by SAMHSA) to provide clinicians with a platform to increase their knowledge and confidence in prescribing buprenorphine. These resources were used to provide the APRNs with training and resource materials to allow them to complete the required 24 hours of training and testing to earn their certification as a buprenorphine waivered practitioner.

APRNs have been recognized as contributing providers for the treatment of opioid use disorder (Holly et al., 2020). Implementing buprenorphine MAT in this primary care setting may help with the effective management of patients with opioid use disorder. At the time of this project, the APRNs in this primary care setting were not certified on the implementation, use, or management of buprenorphine. Implementing evidence-based care to patients with opioid use disorder may impact positive social change by providing a safe and effective treatment measure to help patients manage opioid cravings, which can help patients live healthy and productive lives. Section 2 includes descriptions of the health belief model and the Johns Hopkins nursing evidence-

based practice model, which were used to guide this doctoral project. I also explained the

relevance of this project to nursing practice, provided the local background and context,

and described my role as the DNP student throughout this project.

<div align="center">**Concepts, Models, and Theories**</div>

According to transformational learning theory (Desapio, 2017), learners can

adjust their thinking based on new information received. The health belief model was

used as the framework for this doctoral project. The purpose of the health belief model is

to explain and predict an individual's behavior, belief, and attitude surrounding their

health (Bonar & Bohnert, 2017). The goal of the health belief model is to change an

individual's perception of a disease and use available strategies to help decrease the

occurrence (Erci & Cicek, 2017). This model was developed by Hochbaum, Rosenstock,

and Kegels at the U.S. Public Health Service in the 1950s to gain an understanding of

individuals' failure to use disease prevention and screening for early detection of disease.

The Johns Hopkins nursing evidence-based practice model was selected to assess the

validity of the articles used to support this project.

Transformational Learning Theory

Transformational learning theory was developed in 1978 by Mezirow who

conducted a study of women returning to postsecondary study or a job after an extended

time away. Mezirow's work has been the catalyst for a learning theory that can have

profound effects on society (Desapio, 2017). Transformative learning theory can

empower learners to view things from an ethical point of view to change current ways of

doing things. By providing education on an evidence-based pharmacological treatment, I

encouraged APRNs to use an effective treatment modality for individuals struggling to overcome their opiate addiction.

Health Belief Model

The health belief model has a theoretical background in psychology. Perceived susceptibility, severity, perceived benefits, and efficacy are the main variables associated with the health belief model (Kim & Kim, 2020). The goal of the health belief model is that an individual will take advantage of treatment measures instead of suffering negative health consequences.

The health belief model is the behavior change theory most widely used in health behavior studies (Sulat et al., 2018). The health belief model is composed of the following factors: perceived susceptibility, perceived severity, perceived benefits, and perceived barriers, which made this an applicable framework for this doctoral project. Perceived susceptibility pertains to an individual's risk for developing a health issue, perceived severity pertains to a potential severity and potential consequences of an illness, perceived benefits pertain to the values an individual places on engaging in a specific health related behavior, and perceived barriers pertain to anything that has the potential to interfere with engaging in health-related behaviors (Bonar & Bohnert, 2017). These four factors are used to assess an individual holistically for risk and benefits associated with a health issue. An individual who misuses opiates is susceptible for becoming addicted and developing an opioid use disorder, which could result in an overdose or death. However, with appropriate treatment, the individual can obtain sobriety and live a healthy and productive life. The health belief model was used in a

study that aimed to assess the effectiveness of take-home naloxone in reducing mortality

rates related to opioid overdoses (Mitchell et al., 2017). Findings revealed that take-home

naloxone was an effective harm reduction intervention.

Johns Hopkins Nursing Evidence-Based Practice Model

Nurses developed the Johns Hopkins nursing evidence-based practice model to

promote the incorporation of best evidence into nursing practice while considering

barriers that need to be addressed prior to implementation (Friesen et al., 2017). This

model was used to appraise the strength of evidence used throughout development and

implementation of this project. The Johns Hopkins nursing evidence-based practice

model was used to assist in evaluating the strength of the evidence and research design

used. Nurses from the Johns Hopkins Hospital and School of Nursing developed this

model to promote the incorporation of the best evidence into nursing practice (Friesen et

al., 2017). This model has three steps defined as the PET process: identifying the practice

question, identifying the evidence to the answer, and translating the evidence into

practice.

Using these two models was appropriate for this doctoral project because they

both focus on patient safety. The health belief model focuses on an individual's

awareness of the potential health and mortality risks associated with continued opiate use,

in addition to the benefits that incorporating a safe and effective treatment into their plan

of care may have on an improving their quality of life and sustaining sobriety from opiate

use. The Johns Hopkins nursing evidence-based practice model focuses on evaluating the

evidence of the proposed treatment for safe and effective evidence-based findings that are backed by research.

Definitions of Terms

Advanced practice registered nurse (APRN): An umbrella term developed in 2008 that is used to identify licensure, accreditation, certification, and education as one of the following: certified registered nurse, nurse anesthetist, certified nurse-midwife, and clinical nurse specialist (Hu & Forgeron, 2018).

Evidence-based practice: The use of the best available evidence for decision making using efficient and effective care for patients using a scientific basis (Li et al., 2019).

Opioid use disorder: A medical condition consisting of heroin and other illicit opioids that is effectively treated with medications (Banta-Green et al., 2019).

Relevance to Nursing Practice

This doctoral project has relevance to nursing practice by providing an evidence-based treatment modality for the treatment of opioid use disorder, with the goal of decreasing morbidity and mortality rates and improving an individual's quality of life. There is a great need for APRNs to have an active role in treating clients with opioid use disorder with MAT (Moore, 2019). APRNs have been granted authority to help respond to the opioid epidemic by providing safe MAT in hospital and primary practice settings. All health care settings have been included in the joint effort to curb the opioid epidemic (Mazurenko et al., 2020). The relevance of this project is to improve patient care and

outcomes with buprenorphine, which has shown effectiveness in managing acute opiate withdrawal and maintenance of opiate cravings (Shulman et al., 2019).

The APRNs in the practice setting had been using medications such as benzodiazepines, antidepressants, and antiemetics to help individuals with opioid use disorder manage their addiction and withdrawal symptoms, as well as the promotion of attending Narcotics Anonymous meetings. Research revealed that patients receiving buprenorphine treatment reported high satisfaction in the treatment of their opioid use disorder (Banta-Green et al., 2019). Additionally, an interprofessional approach that includes cognitive and behavior therapies along with medical intervention is needed to reduce withdrawal and relapse (Dydyk et al., 2020).

I provided a diverse community of career professionals with a staff education program for implementing an evidence-based practice with the goal of having a positive impact on social change. The ability to share a safe and effective evidence-based practice with the APRNs within this practice setting, as an efficacious treatment measure for the 39 patients with a diagnosis of opioid use disorder, and to share with colleagues in neighboring practice sites treating patients with opioid use disorder demonstrates a commitment to having a positive impact for the population of patients within the community who are cared for by the APRNs. Including multidisciplinary and coordinated care models can be implement in outpatient treatment to help increase access to MAT in primary care (Lagisetty et al. (2017).

The strategy and standard practice this site had used to address this gap in practice was referring their noncompliant patients with continued misuse of opioids to a local

detox or methadone clinic. The rationale for this strategy and standard of practice was to reduce the physical effects of cravings and opioid withdrawal. Additionally, the APRNs encouraged their clients to attend Narcotics Anonymous to gain support of others who are struggling from the same addiction. This doctoral project advances nursing practice by increasing the APRNs' knowledge and intended use of buprenorphine, the recommended first-line treatment for opioid use disorder. Buprenorphine-naloxone is the preferred first-line treatment for multiple reasons including its safety for reducing the risk of overdose (Bruneau et al., 2018).

Local Background and Context

The setting for the doctoral project was a primary care private practice. This was a feasible setting to accomplish this project due to the evidence-based treatment being within scope of practice for the APRNs and their patient population. The practice location is centrally located to serve both urban and suburban communities with a large African American population. From 2007 to 2015, the highest percentage of opioid drug overdoses in rural counties occurred in the African American population (Lister et al., 2019).

The State of Ohio has the fifth highest rate of drug overdose rates, averaging 24.6 deaths per 100,000 in the United States, and unintentional overdose has become the leading cause of injury-related death in Ohio (Penm et al., 2017). The Governor's Cabinet Opiate Action Team was established in 2011 to implement strategies to promote responsible use of opioids, reduce the supply of opioids, and support overdose prevention by expanding access to naloxone (Penm et al, 2017). The Federal

Department of Health and Human Services implemented five elements to help reduce

opioid misuse by strengthening public health data collection and reporting; advancing

pain management practices; improving access to addiction prevention, treatment, and

recovery support services; increasing the access to overdose-reversal agents; and

supporting cutting edge research in the treatment of pain, opioid use disorder, and

associated conditions (Johnson et al., 2018).

SAMHSA, PCSS, and Clinical Opiate Withdrawal Scale (COWS) are terms used

throughout this doctoral project. SAMHSA works to ensure that the needs of Americans

with behavioral health issues are met (McCance-Katz, 2018). The PCSS is a national

training and mentoring project that was developed in response to the prescription opioid

overdose epidemic (Gordon, 2017). COWS is the most widely used instrument to

evaluate opiate withdrawal symptoms (Nuamah et al, 2019).

Role of the DNP Student

My role as the DNP student for this project was to acquire and disseminate

knowledge. As an APRN and DNP student, I had a personal stake in helping expand

treatment options for the population of patients who suffer from opioid use disorder. I

currently care for patients with opioid use disorder as an APRN in a community-based

mental health organization and currently treat patients with buprenorphine who are well

managed with buprenorphine as evidenced by urine drug screens free of opiates.

As a DNP student at this practice site, I performed my due diligence in

conducting rigorous research of scholarly journal articles published within the last 5 years

on the topic of buprenorphine medication assisted treatment. Additionally, I created a

pretest and posttest that covered buprenorphine, created an educational pamphlet, created

real-life simulations of patients for buprenorphine induction, and played the role of the

patient. My role in this project was to develop and provide education, training, and

practice exercises to allow the APRNs and opportunity to gain experience and confidence

with assessing and completing a buprenorphine induction for clients with opioid use

disorder.

My inspiration for the doctoral project was to improve the lives of individuals

struggling with opioid addiction by enhancing the APRNs' knowledge and use of an

evidence-based buprenorphine MAT to treat their opioid use disorder. Incorporating

buprenorphine into the treatment plan for patients with opioid use disorder can help

patients manage their cravings by the daily self-administration of buprenorphine in the

comfort of their home, allowing them to feel well enough to care for their families, hold

jobs, and engage socially. My bias was due to my use of, familiarity with, and confidence

in buprenorphine MAT and my experience with positive patient outcomes as a result of

using this protocol. My plan for mitigating my bias was to gain an understanding of the

APRNs' resistance or hesitancy and to provide quality education to increase their

knowledge, confidence, and use.

Summary

This section introduced the health belief model and the Johns Hopkins nursing

evidence-based practice model that served as the framework for this project. I also

explained the relevance of using buprenorphine MAT on nursing practice, provided

background about the practice setting in which this doctoral project was implemented,

and described my role as the DNP student in helping combat the opioid epidemic. The

120,000 deaths each year attributed to the misuse of opioids warranted the need to

provide knowledge to APRNs about an additional safe and effective treatment option for

individuals with opioid use disorder. Section 3 covers the practice-focused problem,

sources of evidence, and analysis and synthesis used to support this doctoral project.

Section 3: Collection and Analysis of Evidence

The problem this project addressed was the lack of knowledge and confidence the APRNs in this practice site had with using the MAT. The purpose of this project was to increase the APRNs' knowledge and confidence in buprenorphine by providing education, training, and practical simulation activities to allow the APRNs to complete the necessary training to earn their certification as a MAT provider. The health belief model and the Johns Hopkins nursing evidence-based practice model were used as the framework to support this project of compiling evidence and training to support the use of buprenorphine as an effective treatment option for individuals with opioid use disorder.

The focus of this project was to provide face-to-face and hands-on training to allow the APRNs to learn more about MAT protocol, thereby promoting their knowledge and confidence in the evidence-based tool. In addition, the training included information on the COWS as a tool to assess at-risk patients. The COWS is an 11-item rating scale used by practitioners to rate the signs and symptoms associated with opioid withdrawal. The overall score is used to determine the severity of withdrawal symptoms, ranging from mild to moderate to severe. The severity level is a guide for the initial and proper dosing of buprenorphine therapy.

The practice-focused question for this project aimed to enhance the APRNs' knowledge and confidence in using the buprenorphine MAT protocol with the goal of incorporating MAT for the treatment of patients with opioid use disorder in this practice setting. The project included the use of 47 evidence-based scholarly sources, 18 of which

were analyzed using a systematic review table to rate the level of evidence to validate the effectiveness of buprenorphine.

Section 3 highlights the techniques used to collect scholarly articles through the literature search, including the databases, keywords, and manner in which the sources of evidence were analyzed to support this project. The recording, tracking, and organizing of data with the use of Google Sheets Graphs and Charts and SurveyMonkey are discussed. Additionally, I discuss the use of descriptive analysis to compare pretest and posttest scores to support the APRNs' increased knowledge and confidence in the use of the MAT protocol.

Practice-Focused Question

The guiding practice-focused question for this doctoral project was the following: Does providing education on the use of the MAT protocol to APRNs in this practice setting increase both knowledge and confidence in using MAT protocol? The purpose of developing education and training to increase the APRNs' knowledge and assisting the APRNs with completing the necessary training and testing to earn their certification as a MAT provider aligned with the practice-focused question. At the conclusion of training, the APRNs who completed the training verbally reported increased knowledge, and feedback on their survey aligned with the practice-focused question.

The practice-focused question was relevant to address the identified gap in practice regarding the need for APRNs to be professionally trained and become certified to prescribe buprenorphine for opioid use disorder. Buprenorphine is used worldwide for treating opioid use disorder and has shown effectiveness in improving retention in

treatment and decreasing illicit opioid use (Shulman et., 2019). The purpose of this project was to increase the use of buprenorphine by expanding the APRNs' knowledge and confidence in educating their patients on the risks, benefits, and effects of buprenorphine to decrease opiate cravings and refrain from misuse of opiates by including buprenorphine in their treatment.

Sources of Evidence

The following databases were used to obtain scholarly peer-reviewed journal articles published within the past 5 years: CINAHL, Cochrane Library, PubMed, and PsychINFO. I used the several keywords including *buprenorphine*, *opioid use disorder*, *MAT treatment*, and *MAT Waiver* to find articles published in English and consisting of study participants 18 years of age or older receiving treatment for opioid use disorder. The articles were used to evaluate the effectiveness of buprenorphine MAT. Case control, randomized controlled trials, cohort studies, and quasi-experimental studies were used.

The purpose of this project was to increase the APRNs' knowledge and confidence in using the buprenorphine MAT protocol by providing education and training from articles that supported buprenorphine as a safe and effective treatment option for opioid use disorder. I obtained scholarly peer-reviewed journal articles to compile data and training materials to provide education, training, and practical simulation exercises. Collection and analysis of articles obtained from CINAHL, Cochrane Library, PubMed, and PsychINFO were used to address the practice-focused question. The articles were analyzed to ensure they met the criteria to answer the

practice-focused question by using the Johns Hopkins Hierarchy of Evidence Guide (see

Appendix B).

Evidence Generated for the Doctoral Project

The evidence generated for this doctoral project was acquired by performing

database searches using CINAHL, Cochrane Library, PubMed, and PsychINFO, to

extract scholarly peer-reviewed journal articles published within the past 5 years. The

articles were restricted to adult participants 18 years of age or older who had participated

in a buprenorphine treatment by a buprenorphine MAT provider for the misuse of

opiates. After obtaining the articles that would be included in the project, I analyzed each

article to ensure it met the criteria to address the practice-focused question by making

sure it focused on the keywords buprenorphine, opioid use disorder, and/or medication-

assisted therapy.

The study began with a search for scholarly evidence-based articles published

from the years 2017 to 2022. The search included articles published in English that

involved studies with participants who were receiving buprenorphine treatment. The next

step was to read each article to ensure it met the criteria by highlighting the key terms

buprenorphine, opioid use disorder, and medication-assisted treatment. The articles were

evaluated for the effectiveness of MAT treatment by entering the date from the article

into a systematic review table to analyze the literature and evaluate the strength of the

evidence. The pretest and posttest were generated with questions aimed at ensuring that

APRNs understood how buprenorphine is produced, its formulations, and its proper

dosing. Questions were designed to help APRNs gain confidence in buprenorphine's safety and efficacy in reducing opiate cravings and helping patients achieve sobriety.

Participants

Three APRNs at the practice site were selected to participate in the education and training, which was the intervention to address the practice-focused question for this DNP project. There were only three APRNs at the practice site, and none were certified as buprenorphine providers.

Procedures

The collection of data started with creating 20 questions and correct answers related to buprenorphine and MAT treatment for opioid use disorder. The correct answers were obtained from SAMHSA. Once the questions and answers were created, I created a SurveyMonkey account. Survey Monkey is a free and anonymous online survey and quiz tool. A pretest knowledge assessment and a posttest knowledge assessment were created. The APRNs were required to answer at least 17 questions correctly, earning a score of 85% or higher to pass. The quiz was anonymous. Next a spreadsheet was created using Google Sheets and Graphs to store the pretest and posttest scores to accurately arrange the scores and develop a graph to display the progression in test scores.

The training occurred over a 3-day period from the hours of 7:30 a.m. to 6:00 p.m. excluding 30 minutes for lunch and two 15-minute breaks. The three APRNs at the practice site were the only participants in attendance for the education and training. The training took place in a conference room. Each APRN was stationed at a laptop placed on

the conference table. Each participant was provided a blank notepad, a black ink pen, an

itinerary for the 3-day training structure, a pamphlet, three educational sheets, and a

simulated sheet created by me.

The pretest was administered on the first day of training prior to the start of

training. The posttest was administered after the training concluded. Both tests were

administered in the conference room where the training took place. The APRNs

completed the tests on the laptop at the workspace where they were sitting and were

allotted 30 minutes to complete each test. The test scores were analyzed using descriptive

analysis. Additionally, a simulated activity was created by me allowing the APRNs to

practice using the COWS to accurately assess and apply a rating score to an individual's

acute opiate withdrawal symptoms.

Protections

The implementation of the project started with verbally explaining the project

objective and the measures that would be taken to ensure the APRNs' confidentiality

throughout the project. The APRNs were informed that the training would remain

ethically sound by protecting and safeguarding their identity of knowledge assessment

scores as well as survey responses. The pretest and posttest scores were stored in

SurveyMonkey and Google Sheets and Graphs, which were both password protected.

To recruit and develop a working relationship with the participants, I displayed

respect and kindness to the APRNS and attended staff meetings and engaged in learning

opportunities at this site. The APRNs signed an electronic consent indicating their

agreement to engage in the training through DocuSign. The APRNs were informed

verbally and in writing through the DocuSign consent that their participation in the

training was voluntary and the project did not provide any monetary incentives. The

APRNs were informed that they could discontinue their participation at any time.

The pretest and posttest results stored in SurveyMonkey and Google Sheets and

Graphs were protected by a unique username and password that only I was privy to. The

day of administration of the knowledge assessment testing and completion of the end-of-

training survey, the APRNs were sent an individual link to their email from

SurveyMonkey. The completed assessment scores were received in SurveyMonkey free

of the APRNs' email, only displaying the time completed, each question and answer, the

overall score of each completed assessment, and the survey results. Each APRN

completed the pretest and posttest from their laptop at their workstation. I was seated in

a separate room while the APRNs were completing their knowledge assessment and

survey. I assigned the numbers 1, 2, and 3 in Google Sheets and Graphs in the order in

which the knowledge assessment and survey results were entered, which were date and

time stamped in SurveyMonkey to avoid matching any results and responses to the

APRN. The project remained ethically sound. I did not include any patient or APRN

information when compiling and completing the education and the training, and I did

not include any direct contact with patients or identifiable patient information, negating

the need for Institutional Review Board approval at Walden University because the

study did not include any personal information from the APRNs and did not include any

direct contact with any clinic patient or their personal health information or

demographic data.

Analysis and Synthesis

The recording, tracking, organizing, and analyzing of data to support the evidence of increased education and knowledge was completed using Google Sheets Graphs and Charts and SurveyMonkey. Google Sheets Graphs and Charts was used to create a spreadsheet to store and analyze the data. The Google Sheet was assigned a title Buprenorphine Knowledge and Confidence Assessment Scores. Three columns were created and assigned the labels APRN, Pretest, and Posttest. A vertical column was labeled APRN and numbered 1, 2, 3. Two horizontal columns were created and labeled pretest and posttest with the scores from both tests entered into the respective rows under the column. Once each column had all data entered, a graph was created to display the progression in the testing scores after the education and training.

SurveyMonkey, a free online survey tool and quiz maker, was used to generate a 100% anonymous survey with the same five questions focused on the learner's knowledge and confidence of the MAT protocol. The most helpful portion of the training and education was the newly acquired knowledge, which may influence future treatment plans for patients with opioid use disorder. In addition, a knowledge assessment pretest and posttest were created consisting of the same questions. I used SAMHSA as a resource to confirm the correct answer. The quiz maker consisted of 20 questions. The APRNs were required to answer at least 17 questions correctly, earning a score of 85% or higher to pass.

Thirty minutes was the maximum time allowed for both the pretest and posttest. The survey did not have time allotment and consisted of the following five questions for each APRN:

1. How has your knowledge or skills improved after completing this buprenorphine training?

2. What did you find most helpful about the buprenorphine training?

3. How will your newly acquired knowledge gained from this training affect your future treatment plans for patients with opioid use disorder?

4. How would you describe the effectiveness of this buprenorphine training?

5. What training material did you find most helpful?

The integrity of the APRNs' responses was safeguarded by keeping my login username and password private to ensure the pretest and posttest data were not accessible and were not shared with anyone. After the conclusion of the doctoral project, the Google Sheets Graphs and Charts were deleted; the SurveyMonkey survey, pretest, and posttest results were deleted; and the SurveyMonkey account was closed. Descriptive analysis was used to address the practice-focused question by using quantitative data of knowledge assessment scores to compare the pretest and posttest scores to show the increase in buprenorphine knowledge from the beginning of the training to the completion of the training. The average score of the pretest was 63%, and the average score of the posttest was 96%, showing a 33% increase in overall test scores. Each APRN scored 95% or better on the posttest, which was a quantitative validation that there was an increase in knowledge. At the end of training, each APRN was sent an individual link

via email and the survey responses were returned to SurveyMonkey without the APRNs'

email. The responses to the open-ended questions confirmed the APRNs' increased

knowledge and confidence.

Summary

In 2017, the Acting Secretary of the Department of Health and Human Services

Eric D. Hargan classified the opioid crisis as a public health emergency, making a

commitment to provide tools and resources to change the trajectory of the opioid crisis in

the United States (Farrell & Ekoma, 2022). To address the practice-focused question

(Does providing education on the use of the MAT protocol to APRNs in this practice

setting increase both knowledge and confidence in using MAT protocol), I compiled

scholarly articles to support the effectiveness of buprenorphine for the treatment of opioid

use disorder. I created the knowledge assessment pretest, posttest, and survey to validate

APRNs' increased knowledge and confidence and intent to include buprenorphine as a

treatment option for their clients in this practice setting. Section 3 covered the collection,

analysis, and synthesis of the evidence generated by and for this project, including

literature, pretest and posttest data, and survey data to confirm APRNs' increased

knowledge and confidence in the buprenorphine MAT training. Section 4 includes

findings of this project, implications, unanticipated outcomes, strengths, limitations, and

recommendations for future projects or studies.

Section 4: Findings and Recommendations

The local problem that this doctoral project addressed was the lack of knowledge and use of MAT by the APRNs at the project site. The gap in nursing practice at this practice site was the lack of APRNs using the evidence-based buprenorphine MAT to treat opioid use disorder. The practice-focused question this project aimed to address was the following: Does providing education on the use of the MAT protocol to APRNs in this practice setting increase both knowledge and confidence in using the MAT protocol? The purpose of this doctoral was to increase the APRNs' knowledge and confidence in using buprenorphine as a treatment option for patients struggling with opioid use disorder. The goal was to decrease patients' opiate cravings, decrease the misuse of opiates, decrease morbidity and mortality rates, increase patients' success with sobriety, and improve their quality of life.

The sources of evidence used for this project were 18 scholarly peer-reviewed journal articles retrieved from CINAHL, Cochrane Library, Pubmed, and PsychINFO databases, and resources from SAMHSA and PCSS. The Johns Hopkins nursing evidence-based practice model was the analytical strategy used to appraise the strength of evidence of each journal article used in this project (see Appendix A and Appendix B). The strategy consisted of identifying the practice question and identifying the evidence that would help answer the question. I obtained additional data by examining the pretest scores (60, 80 and 50) and analyzing questions that were missed. APRN1 missed eight questions on the pretest, APRN2 missed four questions on the pretest, and APRN3 missed 10 questions on the pretest. The posttest scores were 100, 95, and 95. APRN1 did

not miss any questions on the posttest, APRN2 missed one question on the posttest, and APRN3 missed one question on the posttest. The marked improvement in test scores validated the increased knowledge of buprenorphine.

Findings and Implications

The findings that resulted from analysis and synthesis of the collected evidence indicated that the misuse of opioids is a national health crisis, which results in over 120,000 intentional and unintentional overdose-related deaths worldwide each year. Research has shown that APRNs can play a pivotal role in helping to combat this health crisis by engaging in education and earning their certification as a MAT buprenorphine provider, which allows them to offer buprenorphine as a safe and effective treatment option for their patients with opioid use disorder. The Federal Drug Administration approved buprenorphine as a safe and effective treatment in an office-based setting (American Nurses Association, 2018).

To accurately gauge the knowledge and confidence level of the APRN, I created a pretest, posttest, and survey using SurveyMonkey, an online survey and quiz maker. Each APRN was sent a link to complete the pretest on the first day of training and was sent a link for the same posttest questions on the final day of training. I left the room at the beginning of each test, leaving only the three APRNs in the room. I returned to the room after the allotted time of 30 minutes. The APRNs were asked to remain seated at the same workstation throughout the training, this allowed the pretest and posttest scores to be matched correctly by using the laptop IP address. This ensured the APRNs' anonymity by me being unable to match the APRN to an email address. A spreadsheet was created

using Google sheets Graphs Sheets and Charts (see Table 1 and Figure 1) to store test

scores and show the trends in the progression of the knowledge from the pretest to the

posttest.

Table 1

Buprenorphine Knowledge and Confidence Assessment Scores

Participant	Pretest score	Posttest score	Difference
APRN 1	60	100	+40
APRN 2	80	95	+15
APRN 3	50	95	+45

Figure 1

Buprenorphine Knowledge and Confidence Assessment Scores
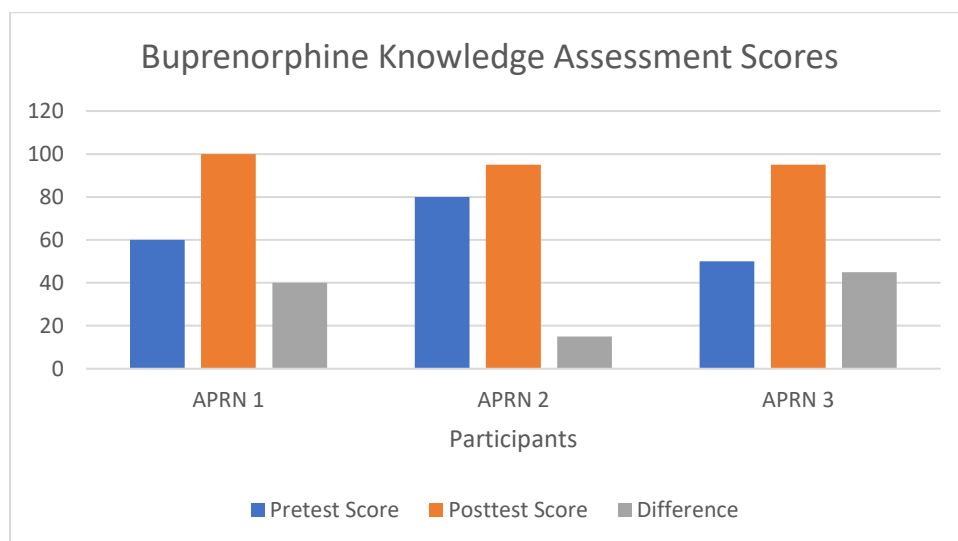
The test scores showed marked improvement of a 33% average increase and all

three APRNs achieving the goal of a posttest score of 85% or higher to pass the

knowledge assessment posttest. APRN 1 knowledge assessment scores improved by

40%, APRN 2 score improved by 15%, and APRN 3 score improved by 45%. The

posteducation and training survey provided additional qualitative data, as shown in Table

2.

Table 2

Survey Results on Buprenorphine Training

Survey question	APRN 1 response	APRN 2 response	APRN 3 response
1. How has your knowledge or skills improved after completing this buprenorphine training?	I understand how to prescribe the correct dosages	I learned that buprenorphine act on three receptors, delta, kappa, and mu	I have a better understanding of administration of buprenorphine
2. How would you describe the effectiveness of this buprenorphine training?	Highly effective. I would feel comfortable adding buprenorphine into my treatment planning discussions	The training was very organized and provided great background information regarding the opioid epidemic	I left this training feeling that I know enough about buprenorphine to safely prescribe to my patients
3. What training material did you find most helpful?	COWS simulation	How to correctly assess and rate opioid withdrawal symptoms	The handout listing the various forms of buprenorphine products along with the available dosages
4. What did you find most helpful about the buprenorphine training?	The personal success stories shared by the instructor who currently use buprenorphine as a treatment option	Learning the requirements for certification and recertification	Tips for recognizing and minimizing diversion and misuse of buprenorphine
5. How will your newly acquired knowledge gained from this training affect your future treatment plans for patients with opioid use disorder?	By discussing how buprenorphine will help with reducing opiate cravings	I will share buprenorphine as an option for non-compliant patients	I will incorporate a COWS assessment into all future screenings of my patients who present with opiate dependence

The theme from the responses for Question 1 was that the APRNs gained an increased understanding of the receptor's buprenorphine acts on and the correct dosing of buprenorphine for treating opioid use disorder. Question 2 responses revealed the nurses' increased comfort with including buprenorphine as a treatment option. In Question 3, a common theme was the helpfulness of the education and training material. Question 4 responses indicated that the APRNs found the student personal experience with using buprenorphine and certification requirements helpful. Future incorporation of buprenorphine into treatment planning was the common theme of responses for Question 5.

The APRNs' confidence was also evidenced by the verbalizing during the postpresentation discussion that they were much more confident in offering buprenorphine as a treatment option for opioid use disorder. The postsurvey assessment revealed the APRNs' knowledge increased by understanding how to properly dose buprenorphine, the receptors buprenorphine acts on, and how to assess acute opiate withdrawal symptoms by using the COWS. Additionally, APRNs' confidence was demonstrated by their accuracy in rating acute withdrawal symptoms with the use of a COWS scale during the simulated activity.

At the conclusion of the training, an open discussion was held that provided an overview of the test displaying each question on the screen and allowing the APRNs to discuss the incorrect answers and clarify additional questions.

Unanticipated Limitations or Outcomes

Ahmadi et al. (2018) evaluated the effectiveness of a single high dose of buprenorphine after 5 or more days of abstinence. The study was effective in showing a decrease in cravings from baseline in all three groups; however, the study was limited due to the absence of female participants. A limitation in the current project was the small sample size of three participants to determine the efficacy of the education. Sample size insufficiency can threaten the validity and generalizability of studies (Vasileiou et al., 2018).

Implications for Individuals

Relapse prevention by decreasing craving for opiates and improving a person's quality of life may result from providing individuals with buprenorphine as a safe and effective treatment option. The impact of buprenorphine MAT can be far-reaching by allowing individuals an opportunity to lead productive lives such as engaging in healthy relationships, securing employment, abstaining from risky behaviors such as promiscuous relationships, and needle sharing. The project also provided the APRNs with increased knowledge of a safe evidence-based treatment that they are able to add to their toolbox for treating their patients with opioid use disorder.

Implications for Communities, Institutions, and Systems

Buprenorphine has the potential to have an interchangeable and multifaceted impact on communities, institutions, and systems by decreasing criminal behaviors to support their addiction such as buying and selling drugs, lying, robbing, stealing, and killing, which increases their chances of entering institutions such as jails and prisons,

and systems such as hospitals and courtrooms (Substance Abuse and Mental Health Service Administration, 2019). Additionally, decreasing opiate use has a potential to decrease hepatitis C rates. Opioid dependent patients are disproportionately impacted by hepatitis C (Batchelder et al., 2017).

Implications for Social Change

Buprenorphine MAT protocol has the potential to impact social change by decreasing the stigma connected to drug addiction by providing a safe and effective treatment that an individual can complete discretely. For example, for individuals who are ashamed of attending support groups or completing rehabilitation programs, MAT affords them the opportunity to obtain their medication from their local pharmacy and administer it in the comfort of their home. MAT affords them an opportunity to discuss their challenges, struggles, and barriers to refraining from opiate use with their provider who can assist them with developing an effective treatment plan instead of struggling with their addiction publicly with continued use or frequent relapsing. Individuals with opium or heroin addiction often encounter dehumanizing discriminatory behaviors, and health care systems are reluctant to provide them with services (Sattler et al., 2021).

Recommendations

Based on my study, the recommended procedures that administrative decision makers can implement are to require that new APRNs joining the practice become certified buprenorphine providers. Additionally, future studies could include a larger sample size of participants; other disciplines such as physician assistant, medical doctor, and doctor of osteopathic medicine; and clinics servicing a different demographic area.

These recommendations may address the gap in practice by increasing disciplines certified to treat a larger population of patients by including other geographic and demographic areas.

Strengths and Limitations of the Project

The strength of this doctoral project was improved knowledge and confidence evidenced by increased knowledge assessment between the pretest and posttest scores. In addition, the APRNs shared their personal satisfaction and increased knowledge and confidence gained through the simulated activities, direct education, and open discussions as shown in Table 2. The inclusion of a simulated activity using the COWS was a strength of this project because it provided the APRNs the opportunity to practice completing an assessment of acute withdrawal, asking questions, and practicing in a nonjudgmental environment. APRNs were able to ask questions and gain confidence in accurately assessing and rating withdrawal symptoms and arriving at the correct formulation to initiate, stabilize, and maintain effective dosing.

My recommendation for the future is to provide similar buprenorphine training to primary practices that provide care for the same population of patients struggling with opioid addiction, as part of required continuing education. Over the past 2 decades of opioid-related emergencies, children and adolescents have not been spared (Hudgins et al., 2019). There is need for further research and effective treatment options to decrease their opiate use. Women with substance addiction deal with unique concerns when accessing treatment, such as fear of reprisal and loss of children (Elms et al., 2018).

Expanding treatment options with a safe and effective treatment has the potential to help women improve their quality of life.

Section 5: Dissemination Plan

Aggregate data and results of this project were shared with the nurse manager of this practice on Friday March 18th while maintaining the anonymity of the APRNs' responses. Additionally, I plan to share my findings with my local professional practice organization, the Ohio Association of Advanced Practice Nurses. This project would also be appropriate for environments such as a nursing seminar to allow dissemination to the broader audience beyond the local practicing area. The information presented in this doctoral project was intended to promote a new treatment option to reduce cravings and decrease the misuse of opiates.

Analysis of Self

As a practicing APRN in the specialty of mental health and addiction, I had a personal obligation to engage in research and learning opportunities to address the gap in care for patients with opioid use disorder.

Role as Practitioner

My role as a practitioner is to acquire and disseminate safe and effective evidence-based practices to my patients and colleagues. Assessing, developing, and managing patient care with the use of pharmacological agents are some of the fundamental roles of a practitioner. The underlying principles and values of the APRN are to focus on addressing patient health needs through coordinated care and collaborative relationships (Hu & Forgeron, 2018). Dissemination of an evidence-based treatment such a buprenorphine to colleagues to increase their treatment options for the patients helps to foster collaborative relationships.

Role as Scholar

As a scholar I am committed to lifelong learning and development of new skills. The completion of this doctoral project allowed me to expand my critical thinking and scholarly writing skills. Additionally, I was able to improve my skills of conducting a systematic review, which included analyzing and appraising scholarly articles. The goal of systematic review is to ensure concepts, arguments, and challenges presented in the beginning of a decision-making process are set aside after they have been weighed (Mertz, 2019).

Role as Project Manager

Project management begins at the brainstorming level of identifying deficiencies and growth opportunities and ends with implementation. As the project manager of this doctoral project, my goal was to maintain excellent communication with the nurse manager and APRNs, the stakeholders who would be impacted by this project. I was diligent and mindful about keeping the stakeholders informed of the progression of my research and the targeted implementation date throughout this project. Project management afforded me the opportunity to expand my leadership skills by developing and delivering educational materials with the goal of contributing to best practices that are safe and evidence based.

This doctoral project allowed me to play a pivotal role in the present state of the public health crisis of opiate addiction. Helping to improve the knowledge and confidence level of APRNs may decrease morbidity and mortality rates associated with the misuse of opiates. The creation, facilitation, and dissemination of educational

materials initiated the start of my long-term professional goals of earning my DNP degree and contributing to the learning of psychiatric mental health nurse practitioner students as an adjunct professor.

The completion of this doctoral project took a great deal of structure, sacrifice, and self-determination. Compiling evidence to support my project, then analyzing and appraising the evidence was not only time-consuming but also challenging due to the hours of reading and scrutinizing the information to complete a systematic review table. The feedback I received from my chair and committee member allowed me to see things from a unique perspective and improve the skills required to develop a doctoral project that was educationally and ethically sound.

Summary

The devastating rate of 120,000 deaths each year worldwide due to the misuse of opiates led the charge for the development of this doctoral project. Through rigorous research, creation of educational material, and sharing my personal experience of the use of buprenorphine as a treatment modality for patients with opiate addiction, this project helped increase the knowledge and confidence level of three APRNs who are now able to join in the fight of decreasing morbidity and mortality rates related to the misuse of opioids.

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Appendix A: Systematic Review Table

Citation	Country	Objective	Research Design and Sample Size	Key Findings	Strengths and Limitations	Level of Evidence
Ahmadi et al. (2018)	Iran	Evaluate the effectiveness of single, high dose buprenorphine after 5 or more days of abstinence	90 men Randomized to three groups	Opiate cravings decreased from their baseline in all three groups	Strength large sample number of participants Limitation – lacked any women participants	Level I
Banta-Green et al. (2019).	United States	Examined the feasibility of a pilot intervention to link participants to ongoing Medication Opioid Use Disorder treatment and psychosocial support after release from custody	Randomized controlled trial Fifteen male adults with a history of Opioid Use Disorder released from Washington State prisons to Department of Corrections community supervision	Three participants reported starting buprenorphine or methadone Participants who received the intervention reported high satisfaction	Strength A care activity log documenting interventions were conducted at 1 and 6 months to assess satisfaction with the intervention Limitation Small sample size	Level I
Dydyk et al. (2020).	United States	Reviewed the evaluation and management of opioid use disorder	Fifty-four literature reviews	Interprofessional approach that include cognitive and behavior therapies supported by medical intervention is needed to reduce withdrawal and relapse	Strength Large sample size	Level V
Elms et al. (2018).	Canada	Gain a better understanding of treatment experiences, barriers of mothers with substance use disorder	Ten women 18-years of age or older Two focus groups	A great concern for the women was the welfare of their children during their substance use treatment, fear of losing custody of their child by disclosing their substance use and fear or stigma.	Strength Two focus groups $25 grocery cards provided for compensation of their time Taxi vouchers provided Limitation	Level I

					Small sample size of ten women – uneven group sizes. One group included three women; the second group included seven women	
Gordon et al. (2017).	United States	Examine the science and evidence base of educational interventions and public initiatives addressing opioid use and opioid addiction	Peer reviewed journal articles	Additional research on educational interventions to address the opioid epidemic in the United States is sorely needed	Strength A call for research papers from scholars who focused on opioid misuse was elicited, forty-eight intents to submit were received, thirteen articles were received, and two articles were included	Level III
Hoffman et al. (2019).	United States	Understand the feasibility of implementation of medications for opioid use disorder in clinic settings	Qualitative assessment of journal articles	Stable and secure funding is required for evidence-based treatment, evaluation, and development of pharmacotherapies to treat drug abuse	Strength54 journal articles included in the study	Level III
Hudgins et al. (2019).	United States	Gain an understanding of how adolescents and young adults obtain prescription opioids	Retrospective Study	Greater than half of youth misusing prescription drugs obtained the medication from friends and relatives	Strength Large sample sizes 27,857 adolescents (12-17 years or age) 28,213 young adults (18-25 years of age)	Level III
Johnson et al. (2018).	United States	Implementation of a data-driven research-based strategy to reduce opioid misuse and its consequences	Nonexperimental study	Five strategies used: strengthening public health data collection and reporting, advancing the practice of pain management, improving access to addiction prevention, treatment, and	Strength: developed a concerted, coordinated evidence-based effort across department divisions to reduce opioid misuse	Level III

				recovery support services, increasing availability of overdose-reversing drugs, supporting innovative research in treatment of pain, opioid use disorder and associated conditions		
Korthuis et al. (2017).	United States	Greater integration of medication – assisted treatment (MAT) for opioid use disorder in primary care settings	Literature reviews and interviews with key informants in the field	Described twelve models for integrating MAT into primary care settings that could be considered for adaptation across diverse health care settings	Strength: inclusion of literature review and interviews with key informants in the field	Level V
Lagisetty et al. (2017)	Across eight countries	Systematically analyze evidence-based primary care opioid use disorder MAT intervention	10 Randomized Controlled Trials 25 Quasi experimental	Multidisciplinary and coordinated care models are effective to implement in outpatient treatment and increase access to MAT in primary care	Limitation the studies were not limited to Buprenorphine-Methadone was also included as a MAT option	Level 1
Mancher, M. & Leshner, A. I. (2019).	United States	Assessing barriers to the use of medications to treat opioid use disorder	National Academies Press	The barriers preventing broader access to life-saving medications of opioid use disorder are stigma, inadequate professional training related to the evidence base for using medications, and insurance	128 scholarly articles used to support findings	Level III
Mazurenko et al. (2020).	United States	Concern that hospital – based clinicians may be incentivized	Individual semi-structured interviews	Majority of the clinicians believed hospitals contribute to the opioid epidemic	Strength: twenty-three clinicians from six difference acute care hospitals	Level V

		to inappropriately prescribe and administer opioids		Clinicians cited Center for Medicare and Medicaid Services (CMS) reimbursement and the Joint Commission's report as the drivers of inappropriate opioid prescribing in hospitals	Limitation: Clinicians and hospitals in the study were part of a single healthcare system	
McClure et. Al. (2019).	United States	Examine the relationship between illicit prescription drug misuse and Hepatitis C infection	Retrospective Study	25.1% tested positive for Hepatitis C The rates of Hepatitis C positive patients are more likely than Hepatitis C negative patients to display high-risk behavior	Strength: large study sample evaluated 39,231 prescription drug monitoring and HCV sets of test results from 18,410 patients	Level III
Moore, D. J. (2019).	United States	Examine the gap that exist for the care of individuals with opioid use disorder	Position statements	The need is great for Nurse Practitioner's to treat patient with opioid use disorder	Strength: Provided details about The Comprehensive Addiction and Recovery Act of July 2016, which enabled Nurse Practitioner is to fil in the gap by prescribing buprenorphine for opioid use disorder	Level IV
Nuamah et al. (2019).	United Sates	Examine the type and content of opioid withdrawal monitoring methods	Literature review	Withdrawal scales are the main method of assessing and quantifying opioid withdrawal intensity	Strength: eighteen opioid withdrawal scales were discovered that has been used within the last 80 years Three data bases used to locate articles published until April 2019	Level V

Olfson et al. (2019).	United States	Evaluated trends in drug overdose deaths involving opioids, certified as unintentional, suicide, or unintended in the United States	Data obtained from the National Vital Statistics System	Between 2000-2017 despite the proportionate decline, the rate of opioid-related suicides as well as unintentional deaths significantly increased. The increases in overdose deaths involving heroin and non-methadone synthetic opioids, including fentanyl, contributed to these trends.	Strengths: included a 17-year time span 2000-2017	Level IV
Shulman et al. (2019).	United States	Review of the use of buprenorphine for treatment of opioid use disorder and discus barriers, challenges, risks, and the efficacy of buprenorphine treatment verses other treatments	Data obtained from World Health Organization and Food and Drug Administration	Buprenorphine compared to placebo improves retention in treatment at low, medium, and high doses Buprenorphine has shown to be effective for treatment of pain and medically supervised withdrawal or maintenance treatment for opioid use disorder	Strengths: Recommendations provided by World Health Organization and US Food and Drug Administration (FDA)	Level IV
Truong et al. (2021).	United States	Reveal trends about patient preferences and strategies for improving opioid use disorder treatment	Group sessions Satisfactions surveys Audio – recorded focused groups	Participants requested psychotherapies to target their impulsivity and to teach future planning and build positive relationships	Strength: study consisted of both male and female participants Thirty-eight focus groups, ninety-two participation events, forty-four unique subjects	Level V

Appendix B: Hierarchy of Evidence Guide

Johns Hopkins Evidence-Based Practice Model for Nursing and Healthcare Professionals

Hierarchy of Evidence Guide
Appendix D

Note: Refer to the appropriate Evidence Appraisal Tool (Research [Appendix E] or Nonresearch [Appendix F]) to determine quality ratings.

	Evidence Level	**Types of Evidence**
Research Evidence (Appendix E)	Level I	• Experimental study, randomized controlled trial (RCT) • Explanatory mixed methods design that includes only a Level I quaNtitative study • Systematic review of RCTs, with or without meta-analysis
	Level II	• Quasi-experimental study • Explanatory mixed methods design that includes only a Level II quaNtitative study • Systematic review of a combination of RCTs and quasi-experimental studies, or quasi-experimental studies only, with or without meta-analysis
	Level III	• Nonexperimental study • Systematic review of a combination of RCTs, quasi-experimental and nonexperimental studies, or nonexperimental studies only, with or without meta-analysis. • Exploratory, convergent, or multiphasic mixed methods studies • Explanatory mixed methods design that includes only a Level III quaNtitative study • QuaLitative study • Systematic review of quaLitative studies with or without meta-synthesis
Nonresearch Evidence (Appendix F)	Level IV	Opinion of respected authorities and/or nationally recognized expert committees or consensus panels based on scientific evidence. Includes: • Clinical practice guidelines • Consensus panels/position statements
	Level V	Based on experiential and non-research evidence. Includes: • Scoping reviews • Integrative reviews • Literature reviews • Quality improvement, program or financial evaluation • Case reports • Opinion of nationally recognized expert(s) based on experiential evidence

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