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Barriers to the Use of Injectable Naltrexone in an Outpatient Setting

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Walden University
2024

Abstract

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Heather Lynn Schultz

MA, Salisbury University, 2015

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Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Social Work

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Abstract

The opioid epidemic is a public health concern that impacts thousands of individuals across the United States. There was a lack of clear understanding of what leads opioid addicts to decline use of medication-assisted treatment (MAT) with injectable extended release naltrexone (XR-NTX). The purpose of this quantitative cross-sectional correlational study was to examine the relationships between past XR-NTX status and demographic factors (gender, age, race, education level, time sober in days, and employment status) and the attitudes about encouragement from providers about engaging in MAT, as well as perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. The theory of reasoned action provided the framework for the study. Survey data were collected from 114 participants with primary or secondary opioid use disorders recruited from outpatient treatment providers who offer MAT with the use of injectable XR-NTX. Results of multiple logistic regression showed that age was correlated with attitudes about encouragement from providers, and work status was correlated with perceptions about MAT. Past use of XR-NTX was not correlated with perceptions or attitudes. Results could positively impact treatment approaches to reach opioid addicts who choose not to engage in MAT with the use of injectable XR-NTX.

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Dedication

I would like to dedicate this dissertation to my family, especially my two daughters. I want you to know that you are capable of accomplishing anything you set your mind to. There will be challenges in life, but hard work and dedication do pay off. Follow your dreams and believe in yourself. You are enough and I love you both all the way to moon. For my husband, who has also endured the mental, emotional, and financial impacts of this journey with me. Thank you for pushing me to be stronger and more resilient. For my parents and siblings, who often provided a reprieve from my daily grind. Those moments in time have been an essential to my overall wellbeing.

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Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

The opioid epidemic is considered a public health concern that impacts the lives of thousands of individuals across the Unites States (Krupitsky, 2012). “Opioid dependence is a major public health concern because of increased morbidity and mortality, poor social functioning, unemployment, and crime associated with the disorder” (Krupitsky et al., 2013, p. 1628). In Maryland, from January to September 2016, there were 1,468 opioid overdose deaths (Maryland Department of Health, n.d.). In 2017, there were 1,594 deaths due to fentanyl and 1,078 deaths due to heroin in Maryland (Maryland Department of Health, 2018). “In 2016, the states with the highest rates of death due to drug overdose were West Virginia (52.0 per 100,000), Ohio (39.1 per 100,000), New Hampshire (39.0 per 100,000), the District of Columbia (38.8 per 100,000), and Pennsylvania (37.9 per 100,000)” (Hedegaard, et al., 2017, para. 2). According to the U.S. Department of Health and Human Services (HHS, n.d.), “overdoses involving opioids killed more than 42,000 people in 2016” (para. 2). These numbers indicate a major health concern across the United States. For example, the difference between motor vehicle crash deaths nationally and in Maryland is perplexing. Nationally, vehicle crashes took 37,461 lives in 2016 (U.S. Department of Transportation, 2017). In the state of Maryland, there were 472 fatal crashes in 2016. From those crashes, 505 people lost their lives. The crude death rate per 100,000 population was 8.4 (U.S. Department of Transportation, 2017). The death rates for overdose via fentanyl or heroin (at 29.8 per 100.000) were well above the national rates and needed to be addressed.

In the past, the United States attempted to combat drug use with zero-tolerance approaches such as the war on drugs. “About half (51%) of federal inmates in 2010 were serving time for drug offenses” (Guerino, et al., 2011, p. 1). Since 1971, policies have been implemented that have had a profound effect on the court system and prison population (“It Is Time to End the War on Drugs,” 2009). During this time, one of the major failings of the war on drugs was its inability to provide treatment to those who are chemically dependent (Grinspoon & Bakalar, 1994; “It Is Time to End the War on Drugs,” 2009). Over the past few decades, the United States has turned to pharmaceutical options to assist in treating individuals diagnosed with opioid use disorders. However, nonadherence with medication regimes is problematic for clients, the community, and treatment providers (Giannetti & Kamal, 2016). According to Giannetti and Kamal (2016), “the World Health Organization (WHO) estimates nonadherence in developed countries at 50%” (p. 138). To combat this epidemic today, the use of medication-assisted treatment (MAT) with the use of injectable extended-release naltrexone (XR-NTX) has become more prevalent.

MATs continue to gain popularity and support as a viable treatment. To date, MATs with the use of methadone, buprenorphine, and oral naltrexone have the best research support for positive outcomes such as retention and abstinence from illicit drugs (Uebelacker et al., 2016). MAT with naltrexone is suggested and often accepted by individuals with substance use disorders because of its ability to decrease drug cravings (Courtney et al., 2016; Krupitsky, 2012; Krupitsky et al., 2011). MAT is also associated with increased retention and decreased relapse rates (Kresina & Lubran, 2011; Saunders

et al., 2015). Observational data demonstrated that injectable XR-NTX use is associated with fewer inpatient hospitalizations than methadone or buprenorphine (Uebelacker et al., 2016). Noncompliance among individuals prescribed oral naltrexone contributed to the creation of once-monthly injectable XR-NTX (Krupisky et al., 2011). Long-term research on treatment outcomes was limited because injectable NR-NTX was approved by the FDA for opioid dependence in 2010. Also, research on outpatient participants who chose not to engage in MAT with the use of injectable XR-NTX was limited.

Kenney et al. (2017) interviewed 397 individuals at the start of their brief inpatient opioid detoxification to determine whether perceived heroin refusal self-efficacy was associated with preference for MAT. Kenney et al. found that MAT refusal was associated with the individual's self-efficacy to refuse using heroin in high-risk situations. If the individual feels confident about their abilities to refuse heroin, they might also choose not to engage in MAT (Kenney et al., 2017). Overconfidence might be considered a reason why outpatient participants might choose not to engage in MAT with the use injectable XR-NTX.

Uebelacker et al. (2016) sought to determine whether beliefs would predict stated patient preferences for a particular MAT or for no MAT. Of particular interest was finding that individuals might choose not to engage in MAT because of their perceptions about being drug free (Uebelacker et al., 2016). Participants chose not to engage in MAT because they believed that engaging in MAT meant that they were not entirely drug free (Uebelacker et al., 2016). This study indicated that participants might choose not to

engage in MAT with the use of injectable XR-NTX following detoxification because of negative beliefs.

What was not known was why outpatient participants refuse MAT with the use of injectable XR-NTX. The purpose of the current quantitative cross-sectional correlational study was to examine the relationships between the independent variables and the dependent variables. The independent variables were past XR-NTX status and demographic factors (gender, age, race, education level, time sober in days, and employment status). The dependent variables were attitudes about encouragement from providers about engaging in MAT and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. The current study sought to provide insight regarding variables that influence outpatient program participants' decision to not engage in MAT with injectable XR-NTX utilizing the theory of reasoned action (TRA) framework. The TRA posits that an individual's thought process impacts their performance of certain behaviors (Ajzen & Fishbein, 1980).

I examined the relationships between past XR-NTX status, demographic factors (gender, age, race, education level, time sober in days, and employment status), attitudes about encouragement from providers about engaging in MAT, and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. This study has the potential to influence substance use treatment across the United States. Research on this topic may contribute to social work and enhance substance use treatment. This chapter describes the research topic and provides information regarding why this study was conducted. Background literature related to the scope of the study is

provided. The theoretical framework is discussed. Social implications are also presented. Lastly, key concepts are defined.

Background

Pharmacotherapy and psychosocial treatment have been found to be effective when treating alcohol and opiate addicts (Krupitsky et al., 2011). In the past decade, injectable XR-NTX, also known as Vivitrol, has been found to be helpful when treating individuals (Krupitsky et al., 2011). According to Krupitsky et al. (2011), MAT was found to be helpful for individuals who are at risk of relapsing after inpatient treatment or incarceration. In a study conducted by Kresina and Lubran (2011), participants receiving Vivitrol had more opioid-free urine drug screens and higher retention rates. Injectable XR-NTX is also associated with fewer opioid cravings (Kresina & Lubran, 2011). In a study conducted by Lobmaier et al. (2010), Vivitrol was identified as a means of helping individuals stay engaged in treatment longer and have fewer cravings. XR-NTX in conjunction with psychosocial treatment might improve acceptance of opioid dependence pharmacotherapy and provide a useful treatment option for many patients (Krupitsky et al., 2011). Overall, integrating MAT with more traditional forms of substance use treatment can improve public health (Kresina & Lubran, 2011).

The literature also suggested that there are many organizational barriers to treatment with injectable XR-NTX (Blum et al., 2014; Kjome & Moeller, 2011; Rieckmann et al., 2010). Blum et al. (2014) indicated that the environmental context and socialization of leaders contributed to the disapproval of MAT among the organization as a whole. The organization's disapproval impacted program participants' access to MAT.

Although previous research examined organizational barriers, the current study addressed individual factors that contribute to a client's personal choice to refuse MAT with use of injectable XR-NTX.

Even though injectable XR-NTX has been found to be beneficial (Kresina & Lubran, 2011; Krupitsky, 2012; Krupitsky et al., 2011, Lobmaier et al., 2010; Vivitrol, 2015), there was a lack of research on outpatient participants who choose not to engage in MAT with the use of injectable XR-NTX. The current study was needed because identifying factors that are related to current program participants choosing not to engage in MAT with injectable XR-NTX may help future program participants.

After an extensive literature review, I determined that clear predictors of refusal to engage in MAT as applied in an outpatient substance use treatment setting were not well understood. Additionally, use of MAT with injectable XR-NTX as an optimal treatment option may have implications for the choice to engage or not engage. The current study filled this gap by focusing on variables associated with TRA such as attitudes, subjective norms, and behavior. This information may help outpatient substance use programs and providers support the success of opiate-dependent program participants.

Problem Statement

There was a lack of clear understanding of what leads opioid addicts to decline use of MAT with injectable XR-NTX**.** The literature suggested that many barriers prevent facilities from offering MAT. For example, one identified barrier is stigma (Rieckmann et al., 2010). Lack of access to Vivitrol has been and continues to be an identified issue on

the state and national level (Krupitsky et al., 2011; O'Malley et al., 2007, Vivitrol, 2015). However, even when organizations are offering MAT with the use of injectable XR-NTX, program participants are refusing this lifesaving medication. In the study conducted by Uebelacker et al. (2016), 21% of participants chose no MAT.

The opioid epidemic is a social issue and a public health concern that impacts the lives of thousands of individuals across the United States (Krupitsky, 2012). Although previous research examined organizational barriers, the current study addressed individual factors that contribute to a client's personal choice to refuse MAT with use of XR-NTX. Data from opiate addicts who chose not to receive injectable XR-NTX were gathered to improve substance use treatment. The goal was to increase awareness and to bridge gaps in services to improve outpatient outcomes with the use of injectable XR-NTX.

Purpose of the Study

The purpose of this quantitative cross-sectional correlational study was to examine the relationships between the independent variables and the dependent variables. The dependent variables were attitudes about encouragement from providers about engaging in MAT and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. The current study included a survey based on the TRA framework developed by Roberto et al. (2014). The relationships between attitudes about encouragement from providers about engaging in MAT and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment (dependent variables) and past XR-NTX status and demographic factors

(gender, age, race, education level, time sober in days, and employment status; independent variables) were examined.

Research Questions and Hypotheses

This study was guided by the following research questions and hypotheses:

RQ1: Is there a predictive relationship between demographics (gender, age, race, education level, time sober, employment status), past injectable extended-release naltrexone (XR-NTX) use status, and attitudes about encouragement from providers about engaging in medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment?

H_o1: There is no statistically significant predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and attitudes about encouragement from providers about engaging in medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

H_a1: There is a statistically significant predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and attitudes about encouragement from providers about engaging in medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

RQ2: Is there a predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and perceptions about medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment?

H_o2: There is no statistically significant predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and perceptions about medication assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

H_a2: There is a statistically significant predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and perceptions about medication assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

Theoretical Framework

The TRA has been used in a variety of settings to examine individual's intentions and behaviors (Ajzen & Fishbein, 1980; Connera et al., 2017; Fleming et al., 2017; Roberto et al., 2014). "The Theory of Reasoned Action (TRA), designed by Ajzen and Fishbein (1980), is a psychological theory discussing the effect of people's decisions on

their performance of certain behaviors" (Ben-Natan et al., 2013, p. 508). According to Ben-Natan et al. (2013),

> the theory constructs, which are interrelated, include behavioral beliefs (respondents' general evaluation, positive or negative, of taking medications), normative beliefs (respondents' perception of the social pressure applied by significant others regarding taking medication), attitude towards the behavior (respondents' attitudes towards the outcomes of taking medication), *subjective norms* (respondents' perception of the beliefs held by people of importance to them), and *behavior intentions* (respondents' intention to administer or not administer prescribed medications). (p. 509)

In the study conducted by Roberto et al. (2017), 210 substance-abuse treatment providers completed a survey measuring TRA variables. Variables included attitudes, subjective norms, perceived behavioral control, intentions, and behavior. Substance-use treatment providers were found to have very positive attitudes, neutral subjective norms, somewhat positive perceived behavioral control, somewhat positive intentions toward recommending MAT as part of their clients' treatment plan, and were somewhat likely to engage in the actual behavior.

For the current study, the variables attitudes, subjective norms, and past behaviors were used. The variables were chosen because Dippel et al. (2017), Fleming et al. (2017), Roberto et al. (2017), and Uebelacker et al. (2016) used the same variables. Other variables were not chosen because I wanted to analyze how program participants' attitudes about encouragement from providers about engaging in MAT and their

perceptions about MAT influence their unwillingness to engage in MAT with injectable XR-NTX. Behavioral beliefs, as defined in the TRA model, were linked with the construct attitudes. Therefore, the study's variable attitudes incorporated both beliefs and attitudes toward MAT. "An attitude is a disposition to respond favorable or unfavorably to an object, person, institution, or event" (Ajzen, 2005, p. 4). This construct is hypothetical and must be analyzed using measurable responses (Ajzen, 2005). In the current study, TRA suggests that the more program participants believe that injectable XR-NTX is not important and should not be administered, the more likely they will be to choose not to engage in MAT (see Ajzen & Fishbein, 1980). This implies that participant's attitudes toward injectable XR-NTX is negative. Additionally, TRA suggests that beliefs are formed from a person's life experiences and knowledge. The individual's beliefs lead to the formation of opinions and impact their reasoning about a specific behavior (Ajzen & Fishbein, 1980). If someone is unknowledgeable about injectable XR-NTX and has had a negative experience with MAT in the past, they will be likely to refuse the medication again.

The variable subjective norms was equivalent to the TRA construct of normative beliefs. Ajzen (1985) defined subjective norm as "the person's perception of the social pressures put on him to perform or not perform the behavior in question" (p. 12). Subjective norm refers to how the individual thinks their significant others think they should behave with regard to MAT (see Roberto et al., 2014). Subjective norms also include how the individual thinks their support groups think they should behave.

The variable past behavior assessed the individual's lifetime involvement with MAT in addition to the current behavioral intention not to accept MAT. This variable addressed how previous experiences with MAT may impact the current decision. TRA assumes that action is initiated with a processing of information, followed by an evaluation of the information and the development of an attitude, and ending with the emergence of a volition or intention to act prior to performance of a particular behavior (Bagozzi, 1982).

The opioid epidemic is a social issue and a public health concern impacting the lives of countless individuals across the United States. TRA was selected because the literature suggested that changing attitudes and subjective norms can change certain health behavior (Dippel et al., 2017). Investigating human nature and the environment would be beneficial in an outpatient substance use treatment setting. Identifying reasons why program participants choose not to engage in MAT with injectable XR-NTX may help programs reach those who choose not to use this lifesaving medication.

Nature of the Study

I used a quantitative approach to determine what, if any, significant relationships exist. A cross-sectional survey of outpatient program participants was developed based on the work of Roberto et al. (2014). A quantitative approach is useful when variables can be measured with numerical values (Creswell, 2009; Laureate Education, 2010). A quantitative approach was also appropriate because of the nature of the research questions and proposed variables (see Warner, 2013). "A survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample

of that population" (Creswell, 2009, p. 155). From the sample results, generalizations are made to the larger population (Creswell, 2009). In the current study, the purpose of survey research was to generalize from a sample to a population so that inferences could be made about the behavior of this population who are outpatient substance abuse program participants with opioid use disorders. Logistic regression was used to statistically analyze the effect of multiple predictor variables on the independent variables (see Warner, 2013).

Furthermore, relational research was employed to test the hypothesis that there is a statistically significant predictive relationship between past injectable XR-NTX use status, demographics (gender, age, race, education level, time sober, employment status), and attitudes about encouragement from providers about engaging in MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. Relational research was also employed to test the hypothesis that there is a statistically significant predictive relationship between past injectable XR-NTX use status, demographics (gender, age, race, education level, time sober, employment status), and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. The null hypothesis was there is no statistically significant predictive relationship between past injectable XR-NTX use status, demographics (gender, age, race, education level, time sober, employment status), and attitudes about encouragement from providers about engaging in MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. The second null hypothesis was there is no statistically significant predictive relationship between past injectable XR-NTX use status, demographics

(gender, age, race, education level, time sober, employment status), and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment.

Study participants included adult participants with primary opioid use disorders recruited from outpatient treatment providers who offered MAT with the use of injectable XR-NTX. The participants were 18 years of age or older and consented to be involved in the study. Nonprobability sampling using a purposeful sampling technique was used. Clients in outpatient substance abuse treatment programs that offered MAT with injectable XR-NTX were recruited to participate in this study. A power analysis was run to determine the minimum sample size.

Surveys of outpatient program participants were administered to capture variables associated with TRA. Survey questions were adapted from the tool used by Roberto et al. (2014). Inferential and bivariate statistics were completed along with data cleaning prior to conducting multivariate statistical analysis of data. A correlational design with logistic regression was used to determine whether the independent variables were strongly correlated to the dependent variables (see Frankfort-Nachmias & Leon-Guerrero, 2015). For the research questions, attitudes about encouragement from providers about engaging in MAT and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment were the dependent variables, and past injectable XR-NTX use status and demographics (gender, age, race, education level, time sober, employment status) were the independent variables.

Definitions

Attitudes: How the individual feels, either positively or negatively, toward the behavior (Roberto et al., 2014).

Behavior: The individual's intention to perform or not perform the behavior (Roberto et al., 2014).

Injectable extended-release naltrexone (XR-NTX): Once-monthly injectable opiate antagonist given to opiate addicts and alcoholics (Vivitrol, 2015). This medication should be administered after opioid detoxification (Vivitrol, 2015).

Medication assisted treatment (MAT): For the purpose of this study, the use of injectable XR-NTX in combination with counseling and behavioral therapies to provide treatment of opiate use disorders.

Opioid antagonist: Medication that "works by blocking the activation of opioid receptors. Instead of controlling withdrawal and cravings, it treats opioid use disorder by preventing any opioid drug from producing rewarding effects such as euphoria" (National Institute on Drug Abuse [NIDA], 2021, para. 4).

Opioids: "Opioids are a class of drugs that include the illegal drug heroin, synthetic opioids such as fentanyl, and pain relievers available legally by prescription, such as oxycodone (OxyContin®), hydrocodone (Vicodin®), codeine, morphine, and many others" (NIDA, n.d., para. 1). Opioids bind to and activate opioid receptors on cells located in many areas of the brain, spinal cord, and other organs in the body, especially those involved in feelings of pain and pleasure. When opioids attach to these receptors, they block pain signals sent from the brain to the body and release large amounts of

dopamine throughout the body. This release can strongly reinforce the act of taking the drug, making the user want to repeat the experience (NIDA, n.d., para. 4).

Outpatient substance abuse treatment: According to NIDA (n.d.), outpatient treatment varies in the types and intensity of services offered. Such treatment costs less than residential or inpatient treatment and often is more suitable for people with jobs or extensive social supports. It should be noted, however, that low-intensity programs may offer little more than drug education. Other outpatient models, such as intensive day treatment, can be comparable to residential programs in services and effectiveness, depending on the individual patient's characteristics and needs. In many outpatient programs, group counseling can be a major component. Some outpatient programs are also designed to treat patients with medical or other mental health problems in addition to their drug disorders.

Past behavior: For the current study, past behavior was defined as the individual's involvement with MAT during previous treatment episodes.

Subjective norms: How the individual thinks their significant others think they should behave (Roberto et al., 2014). For the current study, subjective norms also included how the individual thinks their support network(s) think(s) they should behave.

Theory of reasoned action (TRA): "The Theory of Reasoned Action (TRA), developed by Ajzen and Fishbein (1980), is a psychological theory discussing the effect of people's decisions on their performance of certain behaviors" (Ben-Natan et al., 2013, p. 508).

Assumptions

In this study, I focused on analyzing the relationships between past XR-NTX status, demographic factors (gender, age, race, education level, time sober in days, and employment status), attitudes about encouragement from providers about engaging in MAT, and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. I assumed that past XR-NTX status and demographic factors would statistically predict attitudes about encouragement from providers about engaging in MAT and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. For this purpose, an in-depth analysis of why individuals chose not to engage in MAT was essential. I also assumed that outpatient participants would be an appropriate population for this study because MAT with the use of injectable XR-NTX is intended to be used after detoxification. Injectable XR-NTX can be administered no fewer than 7 days after the individual's last opiate use. Lastly, I assumed that program participants would be capable of reading and understanding the survey questions and would answer the questions honestly.

Scope and Delimitations

The study's population included individuals 18 years of age and older who were enrolled in outpatient substance use treatment. Participating programs were required to offer MAT with injectable XR-NTX, and participants were required to have an opioid use disorder. Adolescents and individuals receiving injectable XR-NTX from their primary care physician were not included in this study.

The theory of planned behavior (TPB; Ajzen, 1985; Ajzen, 1991) was related to the area of study but was not used. TPB seeks to determine the individual's intention to engage in the behavior. Intention is determined by attitude, subjective norm, perceived behavioral control, skills, and constraints. TRA was chosen because I wanted to statistically analyze program participants' decision-making process for choosing not to engage in MAT. I was not interested in predicting behaviors or analyzing the individuals' intentions, as TPB suggests. Social-cognitive theory was also closely related to this area of study because social-cognitive theory seeks to explain human behavior. Specifically, social-cognitive theory assumes that expectations, thoughts, and beliefs influence a person's behavior and are shaped by the individual's social environment (Bennet et al., 2018). This theory was not used because I wanted to gain a deeper understanding of how an individual's perceptions of their support network's approval or disapproval impacts MAT rejection. The results of this study may not be generalizable for the following reasons:

- The study was conducted in two states that may not be comparable to other states in the United States or in other countries.
- Accessibility to MAT with injectable XR-NTX may vary by county and state.
- The participants were from outpatient substance use settings. Results might vary between treatment settings.
- The participants were engaged in other forms of MAT without injectable XR-NTX. Results might very if participants were in engaged in MAT with injectable XR-NTX.

Strengths and Limitations

There were several strengths in this research design. Because surveys were distributed to outpatient providers via email and administered via group, this approach was convenient for program administrators and program participants. This method also helped ensure the largest number of valid responses. Roberto et al. (2014) stated that their survey results are comparable to other study results. These findings suggest that the survey is reliable (Creswell, 2009). Consistency in test administration and scoring was also noted (Roberto et al., 2014). Validity was achieved because Roberto et al. were able to draw meaningful and useful inferences from their survey scores. Survey results indicated that TRA and TPB accurately predicted substance-abuse treatment providers' encouragement of MAT as part of their clients' treatment plan (Roberto et al., 2014). These findings were also consistent with other studies cited by Roberto et al. This indicates that the selected survey has established validity of scores obtained from previous research (Creswell, 2009). In the current study, the results may have practical implications and may influence substance use treatment across the United States.

Some limitations of this research design and methodology must also be acknowledged. Roberto et al. (2014) sought to explore MAT with the use of suboxone, clonidine, and methadone. Because I was examining MAT with the use of injectable XR-NTX, validity and reliability might be altered. Due to the nature of survey design, response bias was a potential limitation. Wave analysis was conducted to check response bias (see Creswell, 2009).

Significance

Social change is a movement that is aimed at bettering something. For example, Fighting Addiction; It Takes Help was developed to have a positive impact on heroin overdose rates in Monroe, Wisconsin (Kundert, 2012). Kundert's (2012) inspiration to start the organization stemmed from the fatal overdose of her son and the astonishing heroin overdose rates in her county. Through this organization, Kundert strives to provide education to the community by involving both the addict and their family. Individuals who engage in social change have identified a need that they are also passionate about. Experiences, understandings, and the desire to make things better facilitate social change. An individual should be passionate about their endeavor and knowledgeable about how to help the community or population.

The current study has the potential to influence substance use treatment across the United States. Like Fighting Addiction; It Takes Help, the current study may be used to reduce overdose rates across the United States. Research on this topic may contribute to social work and enhance substance use treatment. The opiate epidemic has impacted the lives of countless individuals across the United States. On the Eastern Shore of Maryland, eight treatment providers offer Vivitrol (Vivitrol, 2015). Two of the listed resources are inpatient providers; one is a primary care office, and five are outpatient substance use facilities (Vivitrol, 2015). Three of the five outpatient facilities are the agency where I am currently employed, and these three facilities were not included in the present study. More research is beginning to support MAT with the use of injectable XR-NTX, but there are outpatient participants who decline this service. The current study contributed to

the recent literature and may help explain why individuals do not want to receive injectable XR-NTX. Even though injectable XR-NTX has been found to be beneficial (Vivitrol, 2015), there is a lack of research on outpatient participants who chose not to engage in MAT with the use of injectable XR-NTX. The current study may help outpatient providers reach those who decline the service.

Summary

Chapter 1 provided a description of the nature of opioid pandemic and the means to address this public health concern. The purpose of this study, problem statement, nature of the study, hypotheses, research questions, limitations, delimitations, and assumptions were provided. Chapter 2 contains a review of the recent literature on the use of injectable XR-NTX and highlights the need to further explore barriers to MAT in outpatient settings with the use of TRA. There is also a discussion of this study's variables.

Chapter 2: Literature Review

In the United States, one person dies from a drug overdose every 20 minutes (CDC, 2012). The opioid epidemic is considered a public health concern that impacts the lives of thousands of individuals across the United States (Krupitsky, 2012). "Opioid dependence is a major public health concern because of increased morbidity and mortality, poor social functioning, unemployment, and crime associated with the disorder" (Krupitsky et al., 2011, p. 1628). In 2017, there were 1,594 deaths due to fentanyl and 1,078 deaths due to heroin in Maryland (Maryland Department of Health, n.d.). The Eastern Shore of Maryland consists of all of the counties east of the Chesapeake Bay including Caroline, Cecil, Dorchester, Kent, Queen Anne's, Somerset, Talbot, Wicomico, and Worcester (Maryland's Eastern Shore, n.d.). The highest crude death rates per 100,000 population from 2010 to 2014 on the Eastern Shore of Maryland included Caroline (23.2) and Cecil (26.3; Maryland Department of Health, n.d.). In the state of Maryland, the highest crude death rate per 100,000 population was Baltimore City at 29.8 (Maryland Department of Health, 2017). In 2016, West Virginia had the highest death rate due to drug overdose at 52.0 per 100,000 (CDC, 2017). According to the CDC (2018), "overdoses involving opioids killed more than 42, 000 people in 2016" (para. 2).

This indicates a major health concern across the United States. For example, the difference between motor vehicle crash deaths nationally and in Maryland is perplexing. Nationally, vehicle crashes took 37,461 lives in 2016 (IIHS, n.d.). In the state of Maryland, there were 472 fatal crashes in 2016. From those crashes, 505 people lost their

lives. The crude death rate per 100,000 population was 8.4 (IIHS, n.d.). The death rates for overdose via fentanyl or heroin are well above these statistics and need to be addressed.

Overall, addiction has put a financial strain on the United States. Each year the nation spends billions of dollars on health care (Doweiko, 2015). According to Geller et al. (2016), 1.2 million emergency department visits involved the nonmedical use of pharmaceuticals or dietary supplements in 2009:

> The most frequently reported drugs in the nonmedical use category of ED visits were opiate/opioid analgesics, present in 50 percent of nonmedical-use ED visits; and psychotherapeutic agents, (commonly used to treat anxiety and sleep disorders), present in more than one-third of nonmedical ED visits. Included among the most frequently reported opioids were single-ingredient formulations (e.g., oxycodone) and combination forms (e.g., hydrocodone with acetaminophen). Methadone, together with single-ingredient and combination forms of oxycodone and hydrocodone, was also included under the most frequently reported opioids classification—hydrocodone (alone or in combination) in 104,490 ED visits, oxycodone (alone or in combination) in 175,949 ED visits, methadone in 70,637 ED visits. (para. 10)

"Opioid dependence is a chronic disorder requiring long-term treatment" (Krupitsky et al., 2011, p. 108). MATs continue to gain popularity and support as a viable treatment. To date, MATs with the use of methadone, buprenorphine, and oral naltrexone have the best research support for positive outcomes such as retention and abstinence

from illicit drugs (Uebelacker et al., 2016). MAT with naltrexone is suggested and often accepted by individuals with substance use disorders because of its ability to decrease drug cravings (Courtney et al., 2016; Krupitsky, 2012; & Krupitsky et al., 2011). MAT is also associated with increased retention and decreased relapse rates (Kresina & Lubran, 2011; Saunders et al., 2015). Observational data demonstrated that injectable XR-NTX use is associated with fewer inpatient hospitalizations than methadone or buprenorphine (Uebelacker et al., 2016). Lastly, injectable XR-NTX is associated to improved treatment adherence (Vivitrol, 2015).

There was a lack of clear understanding of what leads opiate addicts to decline the use of MAT with injectable XR-NTX. The literature suggested that many barriers prevent facilities from offering MAT. For example, one identified barrier is stigma (Rieckmann et al., 2010). According to Rieckmann et al. (2010), someone might be viewed as not being clean and sober if they engage in MAT. Lack of access to Vivitrol has been and continues to be an identified issue on the state and national level (Krupitsky et al., 2011; O'Malley, 2007, Vivitrol, 2015). For some facilities, it might not be feasible to hire an individual who is capable of administering MAT. "Another key issue for clinical practice is how best to rapidly and safely transition a patient from agonist use to XR-NTX antagonist therapy" (Krupitsky, 2012, p. 361). However, even when organizations are offering MAT with the use of injectable XR-NTX, program participants are refusing this lifesaving medication. In the study conducted by Uebelacker et al. (2016), 21% of the participants chose no MAT.

Although previous research examined organizational barriers, the current study addressed individual factors that contribute to a client's personal choice to refuse MAT with the use of XR-NTX. The purpose of the current study was to examine reasons individuals are choosing not to engage in MAT with the use of injectable XR-NTX for participants in outpatient substance use treatment settings. I used the TRA framework with survey questions related to attitudes, subjective norms, and past behaviors. The dependent variables were attitudes about encouragement from providers about engaging in MAT and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. Past XR-NTX status and demographic factors (gender, age, race, education level, time sober in days, and employment status) were the independent variables.

This study could positively impact treatment approaches to reach the population of opioid addicts who choose not to engage in MAT with the use of injectable XR-NTX. Reaching this population could also decrease the number of overdose deaths. Chapter 2 provides a review of the literature search strategy and theoretical foundation, provides an extensive literature review of key variables, and concludes with a summary.

Literature Search Strategy

Various methods were used to search the literature, and this review was based on articles from peer-reviewed journals, academic journals, and the following electronic databases: ProQuest, EBSCO, PsycINFO, PsychARTICLES, MEDLINE, CINAHL, Sage, and ScienceDirect. These databases were searched using the following search terms: *medication assisted treatment*, *TRA*, *injectable extended-release Naltrexone*,

Vivitrol, *MAT* and *attitudes*, *opioid epidemic*, *public health concern*, *MAT* and *past behavior*, *subjective norms*, and *MAT risks*.

Theoretical Foundation

Background and Assumptions

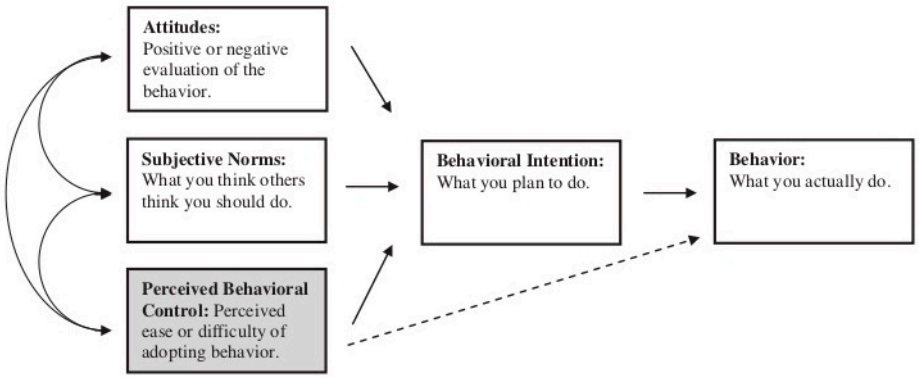
The TRA is designed to predict behaviors that are within the individual's control and to help understand psychological factors that affect the outcome of a behavior (Ajzen, 1985; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975). In all cases, TRA is considered a psychological theory that analyzes how people's decisions influence their behaviors (Ajzen, 1985). The behavior in question is either performed or not performed by the individual (Ajzen, 1985). A core assumption is that people behave rationally because they consider available information and the implications of their actions (Ajzen, 1985). People consider the consequences of their behavior before acting (Ajzen, 1985; Ben-Natan et al., 2013).

"A theory of reasoned action is described which traces the causal links from beliefs, through attitudes and intentions, to actual behavior" (Ajzen, 1985, p. 11). TRA assumes that the relative importance of attitude toward the behavior and subjective norm partially depends on the intention under investigation (Ajzen, 1980). The individual's beliefs lead to the formation of opinions and impact their reasoning about a behavior (Ajzen & Fishbein, 1980). Constructs include behavioral beliefs, normative beliefs, attitude toward the behavior, subjective norms, and behavior intentions. For the current study, the focus was on the TRA variables of attitudes and subjective norms. Attitude toward the behavior is an "individual's positive or negative evaluation of performing the

behavior" (Ajzen, 1985, p.12). Subjective norm is "the person's perception of the social pressures put on him to perform or not perform the behavior in question" (Ajzen, 1985, p. 12). Figure 1 illustrates the TRA.

Figure 1

Theory of Reasoned Action and Theory of Planned Behavior



Note. Adapted from the TRA (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) and the TPB (Azjen, 1991). Nonshaded boxes show the TRA. The entire figure with shaded box shows the TPB.

TRA Literature

The TRA has been used in a variety of settings to examine an individual's intentions and behaviors (Ajzen & Fishbein, 1980; Connera et al., 2017; Fleming et al., 2017; Roberto et al., 2014). The TRA model has been used to study health behaviors (Dippel et al., 2017). In the study conducted by Roberto et al. (2017), 210 substance-abuse treatment providers completed a survey measuring TRA variables to determine whether the variables predicted providers recommending MAT as part of their clients' treatment plan. Variables included attitudes, subjective norms, perceived behavioral

control, intentions, and behavior. Substance-use treatment providers were found to have very positive attitudes, neutral subjective norms, somewhat positive perceived behavioral control, and somewhat positive intentions toward recommending MAT as part of their clients' treatment plan, and were somewhat likely to engage in the actual behavior. This study provided insight about how TRA may help predict substance-use treatment providers' intentions and behaviors related to MAT.

Dipple et al. (2017) sought to implement program change by attempting to modify risky sexual behaviors among teen American Indians by using attitudes and subjective norms. Their study identified the need to address normative beliefs about teen pregnancy and to provide education to change attitudes. This study suggested that providing individuals with education about the health behavior can change attitudes.

Fleming et al. (2017) used the TRA framework to examine physicians' intention to prescribe hydrocodone combination products after they changed from Schedule III to Schedule II. Fleming et al. concluded that attitudes, subjective norms, and past prescribing behaviors were significant predictors of intention to prescribe. This information was useful because I was attempting to analyze the same variables in relation to program participants' refusal to engage in MAT with injectable XR-NTX.

Fazekas et al. (2001) used the TRA framework to identify variables that best predict intention to use or not use condoms among female college students. "Positive general attitudes towards condom use and perceptions of stronger pressure to use condoms were associated with grater intentions to use condoms in the future (Fazekas et al., 2001, p. 111). These findings were significant to the present study because I

hypothesized that program participants' attitudes and subjective norms impact their intentions to not engage in MAT.

Application of the TRA

Connera et al. (2017) employed the reasoned action approach to test predictions of intention and action for protection and risk behaviors. Questionnaires were distributed to participants who volunteered to engage in the study. Reasoned action approach variables included instrumental attitude, experiential attitude, injunctive norm, descriptive norm, capacity, and autonomy. Findings indicated that all reasoned action approach variables were significant positive predictors of protection behaviors and all variables, except injunctive norms, were significant predictors of risk behaviors. These findings were significant to the present study because TRA was used to identify reasons why individuals choose not to engage in MAT. Choosing not to engage in MAT might be considered a risk behavior because the chances of relapsing after inpatient or incarceration are significant for opioid addicts (Krupitsky et al., 2011).

In another study utilizing TRA, an online questionnaire was sent to Texas Medical Association physicians who were likely to prescribe opioids. The questionnaire was designed to assess intentions to prescribe hydrocodone combination products (HCPs) after the medication was indicated as Schedule II instead of Schedule III. The physician's intentions were examined utilizing the framework of the theory of reasoned action (TRA). Predictor variables included attitude, subjective norm, and past behavior. Variables were measured on a 7-point Likert-type scale. The linear regression analysis

indicated that attitude, subjective norm, and past prescribing behavior were significant predictors of intention to prescribe HCPs after rescheduling (see Fleming et al., 2017).

The rescheduling of HCPs was the Drug Enforcement Administration's attempt to slow the prescription drug abuse epidemic by limiting access to the medication (Fleming et al., 2017). This study is relevant to the dissertation topic because it provides insight into the decision-making process of physicians. I am attempting to apply the same framework to statistically analyze if program participant's attitudes, subjective norm, and past behavior correlate with their resistance to MAT with injectable XR-NTX.

Rationale

Previous researchers have utilized a TRA framework to examine intentions and behaviors associated with a variety of health behaviors (Ben-Natan et al., 2013; Dipple et al., 2017; Fazekas et al., 2001; Fleming et al., 2017, Roberto et al., 2017). Focusing on the TRA variables of attitudes, subjective norms, and past behaviors may be beneficial in an outpatient substance use treatment setting to identify reasons why program participants choose not to engage in MAT with injectable XR-NTX. This knowledge could help programs reach those who choose not to utilize this lifesaving medication.

Literature Review

The opioid epidemic is a public health concern impacting the lives of countless individuals across the United States. TRA was selected because the literature suggests that changing attitudes and subjective norms can change certain health behavior (Dippel et al., 2017). For this study, the TRA variables of attitudes, subjective norms, and past behaviors were used. TRA suggests that the more program participants believe that

injectable XR-NTX is important and should be administered, they will choose to engage in MAT (Ajzen & Fishbein, 1980). Thus implying that attitudes and beliefs are related to behaviors. Lastly, TRA suggests that beliefs are formed from life experiences and one's knowledge. The individual's beliefs lead to the formation of opinions and impact one's reasoning about a specific behavior (Ajzen & Fishbein, 1980). If someone is unknowledgeable about injectable XR-NTX and has had a negative experience in the past, they will be less likely to utilize the medication.

MAT and Injectable XR-NTX

The opioid epidemic is considered a public health concern that impacts the lives of thousands of individuals across the nation (Krupitsky, 2012). However, current data about long-acting naltrexone is limited (Kjome & Moeller, 2011). There are also many barriers to treatment with injectable XR-NTX (Blum et al., 2014; Kjome & Moeller; 2011; Rieckmann et al., 2010). A study conducted by Blum et al. (2014) to explore organizational barriers, indicated that the environmental context and socialization of leaders contributed to the disapproval of medication assisted treatment (MAT). While previous research has examined organizational barriers, the current study will consider individual level factors that contribute to a client's personal choice to refuse MAT with use of injectable XR-NTX.

Pharmacotherapy and psychosocial treatment have been found to be effective when treating alcohol and opiate addicts (Krupitsky et al., 2011). Specifically, this study was focused on outpatient substance abuse treatment and MAT with the use of injectable XR-NTX. Injectable extended-release Naltrexone (XR-NTX) is a once monthly

injectable opiate antagonist given to opiate addicts and alcoholics (Vivitrol, 2015). It is considered an opiate antagonist because the medication fits over the brain's opiate receptors. This is unique because other forms of MAT either fit fully or partially into the opiate receptors. Injectable XR-NTX should be administered after opioid detoxification (Vivitrol, 2015). If it is administered prematurely, the individual will experience precipitated withdrawal. This can be considered one risk of choosing to engage in MAT with the use of injectable XR-NTX.

In the past decade, injectable extended-release Naltrexone, also known as Vivitrol®, has been found to be helpful when treating substance use disorders because of its many benefits (Courtney et al., 2016; Krupitsky et al., 2011). According to Krupitsky et al. (2011), MAT was found to be helpful for individuals who are at risk of relapsing after inpatient treatment or incarceration. In a study conducted by Kresina and Lubran (2011), participants receiving Vivitrol had more opioid-free urine drug screens and higher retention rates. Injectable XR-NTX is also associated with fewer opioid cravings (Kresina & Lubran, 2011). In a study conducted by Lobmaier et al. (2010), Vivitrol was identified to help individuals stay engaged in treatment longer and have fewer cravings. XR-NTX in conjunction with psychosocial treatment might improve acceptance of opioid dependence pharmacotherapy and provide a useful treatment option for many patients (Krupitsky et al., 2011). Overall, integrating MAT with more traditional forms of substance use treatment can improve public health (see Kresina & Lubran, 2011).

TRA Constructs

This study focused on the TRA variables of attitudes, subjective norms, and past behaviors because these three variables are most associated with why individuals choose not to engage in MAT with injectable XR-NTX. Intentions are determined by attitudes and perceived subjective norms. Applied to outpatient program participants who choose not to engage in MAT with injectable XR-NTX, TRA postulates that opioid addicts choose not to receive injectable XR-NTX because of unfavorable MAT attitudes and perceived subjective norms toward MAT influences their intention and decision not to engaged in MAT with injectable XR-NTX.

Attitudes

"An attitude is a disposition to respond favorable or unfavorably to an object, person, institution, or event" (Ajzen, 2005, p. 4). This construct is hypothetical and must be analyzed using measurable responses (Ajzen, 2005). For this study, the focus will be kept on conative responses. "Responses of a conative nature are behavioral inclinations, commitments, and actions with respect to attitude object" (Ajzen, 2005, p. 5). Attitudes are how the individual feels, either positively or negatively, toward the behavior (Roberto et al., 2014, p. 308). The study conducted by Vinothkumar and Subramanian (2016) concluded that several core attitudes significantly predicted intention to enlist in defense services.

> In the field of social psychology, studies on the influence of attitudes on behavior have shown that educationalists believe that in a behavioral change system, if people obtain relevant knowledge that is helpful in improving the environment,

> they may gain further environmental awareness and a positive attitude towards the environment, and therefore exhibit a greater level of pro-environmental behavior. (Fang et al., 2017, p. 4)

One study conducted by Fleming et al. (2017) operationalized *attitude* as physicians' attitude towards rescheduling hydrocodone combination products (HCPs) from schedule III to schedule II. Researchers operationalized *attitude* in this manner because they "hypothesized that those who opposed rescheduling would be more likely to prescribe HCPs" (Fleming et al., 2017, p. 506). Dippel et al. (2017) sought to utilize *attitudes* and *subjective norms* to modify sexual behavior among American Indian teens and young adults.

Subjective Norms

Ajzen (1985) defines subjective norm as "the person's perception of the social pressures put on him to perform or not perform the behavior in question" (p. 12). Subjective norms are how the individual thinks his/her significant others think they should behave (Roberto et al., 2014, p. 308). Subjective norms will also include how the individual thinks their support networks think they should behave. Support networks include, but are not limited to, 12-Step meetings, Celebrate Recovery, and SMART Recovery. These are prevalent sources of support outside of treatment for individuals. The study conducted by Vinothkumar and Subramanian (2016) also concluded that subjective-norms significantly contribute to the enlistment intention. Lorenzo-Blanco et al. (2016) concluded that social disapproval of drinking was correlated with lower past 90-day drinking (p. 617).

Past Behavior

Past behavior was assessed using survey items concerning the individual's past utilization of MAT with injectable XR-NTX. Past behavior was also considered the use of other forms of MAT, such as Methadone and/or Buprenorphine. Past behavior is a variable of interest because is has been claimed to be influential in determining future behavior (Fleming et al., 2017). According to Uebelacker et al. (2016), "many opioid dependent patients do not receive MATs either upon discharge from an inpatient detoxification program or at an outpatient appointment with a care provider" (p. 48).

Rationale

Even though injectable XR-NTX has been found to be beneficial (Kresina & Lubran, 2011; Krupitsky, 2012; Krupitsky et al., 2011, Lobmaier et al., 2010; Vivitrol, 2015), there is a lack of evidence-based research that explores data gathered from outpatient participants who choose not to engage in MAT with the use of injectable XR-NTX. Examining the relationships between past XR-NTX status, demographic factors (gender, age, race, education level, time sober in days, and employment status), attitudes about encouragement from providers about engaging in medication-assisted treatment, and perceptions about medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment will help reach future program participants. Specifically, information from opiate addicts who chose not to receive injectable XR-NTX was gathered to improve substance use treatment. The gathered information will help explain barriers to treatment by better understanding the population. Ultimately, the goal was to increase awareness and to help

bridge gaps in service so that more outpatient participants are more likely to maintain long-term abstinence with the use of injectable XR-NTX.

Summary and Conclusions

TRA variables have been found to predict health behaviors (Ben-Natan et al., 2013; Dipple et al., 2017; Fazekas et al., 2001; Fleming et al., 2017, Roberto et al., 2017). Lorenzo-Blanco et al. (2016) found that social disapproval was correlated with lower past 90-day drinking (p. 617). Uebelacker et al. (2016) indicated that positive beliefs were associated with medication preferences. Lastly, Fleming et al. (2017) found that physician's past behaviors were the most significant predictor of intention to prescribe Schedule II medication. However, after an extensive literature review, what is not addressed is the use of TRA and how it can be applied in outpatient substance use treatment setting to explain why individuals with opioid use disorders are not engaging in MAT with the use of injectable XR-NTX. This study used a cross sectional survey to test whether program participants' past XR-NTX status and demographic factors correlate with their attitudes about encouragement from providers about engaging in medication-assisted treatment and their perceptions about MAT. Chapter three addresses the methodology, data collection, and provides in-depth information about the methods and identifies specific means of bridging the identified gap.

Chapter 3: Research Method

The purpose of this study was to examine the relationships between the independent variables and the dependent variables. The independent variables were past XR-NTX status and demographic factors (gender, age, race, education level, time sober in days, and employment status). The dependent variables were attitudes about encouragement from providers about engaging in MAT and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. It was important to examine the reasons why opiate-dependent individuals are choosing not to engage in MAT with the use of injectable XR-NTX because the opiate epidemic is a major social problem across the United States. This study aimed to add to the literature about why outpatient program participants choose not to engage in MAT with the use of injectable XR-NTX. Results may be used to influence program development and inform the development of interventions used by treatment providers. The goal of this cross-sectional study was to increase awareness and to help bridge gaps in services to improve outpatient outcomes with the use of injectable XR-NTX. This study may impact practice, policy, and research. This chapter includes a discussion of the research design and rationale; methodology including the population, sampling procedures, and data analysis plan; threats to validity; and ethical procedures.

Research Design and Rationale

This quantitative study included a cross-sectional design to examine the relationships between the independent variables and dependent variables. A quantitative approach was used because the research questions could be assessed with numerical

values (see Creswell, 2009; Laureate Education, 2010). A quantitative approach was also appropriate because of the nature of the research questions and variables (see Warner, 2013). "A survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population" (Creswell, 2009, p. 155). A cross-sectional design was used to determine causal effects of one or more independent variables upon dependent variables at a given point in time (see Creswell, 2009). The research design aided in answering the research questions and determining the existence of an association between the independent variables and dependent variables. From the sample results, generalizations could be made to the larger population (see Creswell, 2009).

The purpose of this survey study was to generalize from a sample to a population so that inferences could be made about the behavior of the population of outpatient substance abuse program participants with opioid use disorders. Logistic regression was used to statistically analyze the relationship of multiple variables with the independent variable (see Warner, 2013). Furthermore, relational research was employed to test the hypothesis that there is a statistically significant relationship between the independent variables and the dependent variables. The first null hypothesis was that there is no statistically significant predictive relationship between past injectable XR-NTX use status, demographics (gender, age, race, education level, time sober, employment status), and attitudes about encouragement from providers about engaging in MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. The second null hypothesis was that there is no statistically significant predictive relationship between

past injectable XR-NTX use status, demographics (gender, age, race, education level, time sober, employment status), and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. The recent literature included a combination of cross-sectional and longitudinal studies; however, a cross-sectional design was the most appropriate for the current study. The time constraints for this study could have impacted obtaining an adequate number of survey responses to achieve statistical power.

Description of Variables

The study variables included the independent variables of past XR-NTX status and demographic factors (gender, age, race, education level, time sober in days, and employment status) and the dependent variables of attitudes about encouragement from providers about engaging in MAT and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. Attitudes were defined as how the individual feels, either positively or negatively, toward the behavior (see Roberto et al., 2014). Past behavior was defined as the individual's involvement with MAT during previous treatment episodes. Injectable XR-NTX is a once-monthly injectable opiate antagonist given to opiate addicts and alcoholics (Vivitrol, 2015). This medication should be administered after opioid detoxification (Vivitrol, 2015). MAT, for the purpose of this study, was defined as the use of injectable XR-NTX in combination with counseling and behavioral therapies to provide treatment of opiate use disorders.

Methodology

Research Participants

The study's target population included male and female adult participants with primary or secondary opioid use disorders recruited from outpatient treatment providers who offer MAT with the use of injectable XR-NTX. Participants included only those who were currently choosing not to engage in MAT with the use of injectable once monthly XR-NTX, and included those on other forms of MAT. The participants were 18 years of age or older and consented to be involved in the study. The sample size included 114 participants to conduct logistic regression.

Sampling and Sampling Procedures

A nonprobability approach using purposeful sampling was used. Purposeful sampling was appropriate for this cross-sectional study because the target population was adult outpatient participants who chose not to engage in MAT with injectable XR-NTX. Outpatient substance abuse treatment programs that offer MAT with injectable XR-NTX were recruited to participate in this study. These outpatient programs were identified using Vivitrol's webpage. The webpage allows users to enter a zip code to locate programs that offer treatment with injectable XR-NTX within a desired radius. Efforts were made to include programs that were not linked to my current employer. An agency recruitment letter was sent via email to the program's director or clinical director (see Appendix A). Permission was obtained from the program director or clinical director to administer surveys to program participants. Surveys were distributed to program participants either my mail or by email. Each survey included a recruitment cover letter

(see Appendix B). The counselors were responsible for identifying all clients who met the research criteria. Inclusion criteria included consenting adults engaged in outpatient substance abuse treatment with a primary opioid use disorder who are not currently receiving injectable XR-NTX. Individuals who were under 18 years of age and who were currently receiving XR-NTX were not included in this study.

The sample included 114 participants. A repeated power analyses was conducted using the G* Power calculator v. 3.1.9.6 (see Faul et al., 2007). I did so to determine the statistical power based on the final sample size of 114. The analysis was based on the test family of *F*, using linear multiple regression, fixed models, and R^2 deviation from zero with a post hoc alpha of .05 and effect size of .13 using seven predictors (past injectable XR-NTX use status, gender, age, race, education level, time sober, and employment status) and 114 respondents. The software utilized for statistical analysis was IBM Statistical Package for Social Sciences (SPSS) version 28. A power analysis through SPSS for logistic regression was conducted to determine whether the sample size produced adequate power in answering the research questions. The purpose of the survey study was to generalize from a sample to a population so that inferences could be made about the behavior of the population of outpatient substance abuse program participants with opioid use disorders.

Data Collection

Outpatient substance abuse treatment providers were identified using the following Vivitrol website. Each facility's director or clinical director was initially be contacted via phone. If they agreed to receive more information, an agency recruitment

letter was sent via email. “A survey design provides a quantitative or numeric description of trends, attitudes, or opinions of a population by studying a sample of that population” (Creswell, 2009, p. 155). From the sample results, generalizations were made to the population (see Creswell, 2009). The counselors were responsible for identifying all clients who met the research criteria. After the clients consented to participate, counselors provided me with the individuals’ email addresses or mailing addresses. Surveys were administered upon receipt of contact information. I and the counselors were available via phone and email to help read the survey items, if necessary, or answer questions. Counselors were given 2 weeks to identify research participants. Research participants were given 2 weeks to complete and return the survey. Any mailed surveys included a stamped return envelope. The surveys were stored on a password-protected hard drive or in a Health Insurance Portability and Accountability Act secure bag. Counselors were also asked to provide their clients with emotional support, if necessary, after the survey was completed.

Instrumentation and Operationalization of Constructs

A cross-sectional survey of adult outpatient program participants was developed based on the work of Roberto et al. (2014). Surveys of outpatient program participants were administered to capture variables associated with TRA. Survey questions were adapted from the tool used by Roberto et al. Adaptations to the survey were required because Roberto et al. surveyed substance-abuse treatment providers to determine whether the variables predicted providers recommending MAT as part of their clients’ treatment plan. Variables included attitudes, subjective norms, perceived behavioral

control, intentions, and behavior. A self-administered modified version of Roberto et al.'s questionnaire was beneficial when examining relationships between the independent and dependent variables. The independent variables were past XR-NTX status and demographic factors (gender, age, race, education level, time sober in days, and employment status). The dependent variables were attitudes about encouragement from providers about engaging in MAT and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. Another adaption was added to collect data on past behaviors. These questions were added because past behaviors can influence current decision (Fleming et al., 2017; Roberto et al., 2014). Data collections continued until statistical power was achieved, per the power analysis.

Roberto et al. (2014) developed the selected instrument. I obtained permission in writing on March 13, 2019 (see Appendix C). The survey was used by Roberto et al. to determine whether TRA and TPB can retrospectively predict whether substance-abuse treatment providers encourage their clients to engage in MAT as part of their treatment plan. Roberto et al. also defined MAT "as the use of medications such as suboxone, clonidine, and methadone in combination with counseling and behavioral therapies to provide treatment of substance-use disorders" (p. 309).

A qualitative study conducted by Malvini-Redden et al. (2013) helped shape the research design and instrument used by Roberto et al. (2014). The study conducted by Malvini-Redden et al. (2013, as cited in Roberto et al., 2014) consisted of focus groups of clients who were currently receiving MAT. Roberto et al. designed their survey using procedures outlined by Ajzen and Fishbein (1980) and Madden et al. (1992). The

survey's design and the high alphas obtained, .82 to .93, were associated with a high level of confidence in the measures and allowed for more accurate comparisons to other studies (Roberto et al., 2014). Also, correlations were based on one-tailed probability estimates (see Roberto et al., 2014).

Operationalization of Variables

The dependent variable *attitudes* are defined as "how the individual feels, either positively or negatively, toward the behavior" (Roberto et al., 2014, p. 308). *Attitudes* was operationalized in the data set as follows. Three sections of items were used to measure attitude. Participants were asked a series of questions related to the following: (1) "How important do you think it is for your treatment provider to address each of the following issues to encourage you to use medication-assisted treatment as part of your treatment plan?" A five-point, Likert-type scale ranging from *very unimportant* = 1 to *very important* = 5 were used to measure all items; (2) "To me, having my treatment provider encouraging me to use medication-assisted treatment as part of my treatment plan is:" Respondents were asked to select from the following options: Very Bad to Very Good, Very Harmful to Very Helpful, and Very Useless to Very Useful; (3) The last section on attitudes asks questions about participant's perceptions of using MAT as part of their treatment plan. Participants were asked the following: "Please indicate how strongly you disagree or agree with each statement." A five-point, Likert-type scale ranging from *strongly disagree* = 1 to *strongly agree* = 5 were used to measure their responses. Refer to Appendix D for full length survey.

Independent variable, *past behaviors*, included the participant's responses (yes = 1, no = 0) for the following: (1) in the past have you engaged in MAT with the use of methadone (MMT); (2) in the past have you engaged in MAT with the use of buprenorphine (BUP); (3) in the past have you ever engaged in MAT with the use of oral naltrexone; (4) in the past have you ever engaged in MAT with the use of injectable extended-release naltrexone (XR-NTX).

The dependent variable *subjective norms* were operationalized into the data set as follows. Participants were asked: (1) "Most people who are important to me think that I should use medication-assisted treatment as part of my treatment plan;" (2) "Most counselors who are important to me want me to encourage my peers to use medication-assisted treatment as part of their treatment plan." A five-point, Likert-type scale ranging from *strongly disagree* = 1 to *strongly agree* = 5 were used to measure their responses. The variables *attitude* and *subjective norms* are considered to be a quantitative variable and the variables *past behaviors* is considered categorical variables. Refer to Appendix E for a list of variables.

Data Analysis

Inferential and bivariate statistics were completed along with data cleaning prior to conducting multivariate statistical analysis of data. A correlational design using logistic regression determined whether the independent variables were strong predictors of the dependent variables (Frankfort-Nachmias & Leon-Guerrero, 2015). For the proposed research questions, the dependent variables consisted of attitudes about encouragement from providers about engaging in medication-assisted treatment and

perceptions about medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment. The independent variables were past XR-NTX status and demographic factors (gender, age, race, education level, time sober in days, and employment status). The variables attitudes and perceptions (subjective norms) were measured using a 5-point, Likert-type scale. The variable past behavior is measured using yes and no responses. SPSS was used to conduct logistic regression analyses. This form of data analysis statistically showed if the chosen variables are significantly correlated. Hypotheses were tested to determine which variables best predict non-use of MAT. A missing values analysis was conducted to determine if data is missing and if there is an association between the missing values and other variables in the data set.

Research Questions and Hypotheses

This study was guided by the following research questions:

RQ1: Is there a predictive relationship between demographics (gender, age, race, education level, time sober, employment status), past injectable extended-release naltrexone (XR-NTX) use status, and attitudes about encouragement from providers about engaging in medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment?

H_o1: There is no statistically significant predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and attitudes about encouragement from providers about engaging in medication-assisted

treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

H_a1: There is a statistically significant predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and attitudes about encouragement from providers about engaging in medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

RQ2: Is there a predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and perceptions about medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment?

H_o2: There is no statistically significant predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and perceptions about medication assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

H_a2: There is a statistically significant predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and

perceptions about medication assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

Threats to Validity

Some limitations of this research design and methodology must be acknowledged. The study conducted by Roberto et al. (2014) surveyed treatment providers. The validity and reliability could have been impacted because the current study surveyed program participants rather than providers. Roberto et al. (2014) sought to explore MAT with the use of suboxone, clonidine, and methadone. Since I was exploring MAT with the use of injectable XR-NTX, validity and reliability might have been altered. Due to the nature of survey design, response bias was a potential limitation. Wave analysis was conducted to check response bias (Creswell, 2009). Lastly, to few program participants would negatively impact the statistical power and overall validity of the study. The repeated power analyses was conducted using the G* Power calculator v. 3.1.9.6 (Faul et al., 2007) to determine the statistical power based on the final sample size of 114. The power analysis confirmed that the sample size of 114 indicated statistical power for RQ1 and RQ2.

Ethical Procedures

Appropriate approval from identified outpatient substance abuse treatment providers were obtained in writing prior to conducting the proposed study. Client participation is completely voluntary. Clients had the right to not participate and could choose not to answer questions they did not understand. Clients also had the right to stop

the survey at any time. Counselors were asked to provide support to their clients during and after the study. Counselors were also asked to help read the survey tool to clients if a literacy issue was indicated. If the clients experienced any emotional distress, such as symptoms of anxiety, they were able to reach out to their counselor(s) for support. Clinicians were given my personal cell phone number and my Walden email address. They were permitted to contact me at any point throughout the process.

Program participants were protected with informed consents and approved by the Institutional Review Board (no. 08-07-20-0610608). Participants were provided with an informed consent that informed them about the study and how information gained would be used. Counselors distributed the informed consent to their client(s) prior to the completion of the survey. Surveys were only completed if informed consent was obtained. Surveys were not linked to specific participant names. Instead, a numbering system was used to record survey data. Data will be stored in a locked file for a minimum of five years. The study proposal was submitted to and approved by the Walden University Institutional Review Board.

Summary

Chapter 3 provided detailed information on the study design and methods to examine the relationships between the independent variables and the dependent variables among opiate addicts in outpatient substance about treatment. Cross-sectional survey data was used to examine the relationship between variables. Chapter 4 provides detailed information on the data collection process and the results of the statistical analyses.

Chapter 4: Results

The purpose of this quantitative cross-sectional correlational study was to examine the relationships between the independent variables and the dependent variables. The independent variables were past XR-NTX status and demographic factors (gender, age, race, education level, time sober in days, and employment status). The dependent variables were attitudes about encouragement from providers about engaging in MAT and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. The RQs and hypotheses for this study were the following:

RQ1: Is there a predictive relationship between demographics (gender, age, race, education level, time sober, employment status), past injectable extended-release naltrexone (XR-NTX) use status, and attitudes about encouragement from providers about engaging in medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment?

H_o1: There is no statistically significant predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and attitudes about encouragement from providers about engaging in medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

H_a1: There is a statistically significant predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and attitudes

about encouragement from providers about engaging in medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

RQ2: Is there a predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and perceptions about medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment?

H_o2: There is no statistically significant predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and perceptions about medication assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

H_a2: There is a statistically significant predictive relationship between past injectable extended-release naltrexone (XR-NTX) use status, demographics (gender, age, race, education level, time sober, employment status), and perceptions about medication assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

This chapter contains information on the data collection, results, data cleaning, sample demographics, dependent variable distribution, preanalysis data screening, assessment of outliers, and missing data.

Data Collection

Walden University's Institutional Review Board (IRB) approval was obtained on August 7, 2020. The recruitment process began after obtaining approval from Walden University's IRB and the state of Maryland's IRB. Outpatient substance abuse treatment programs that offer MAT with injectable XR-NTX were invited to participate in the study. These outpatient programs were identified using Vivitrol's webpage. An agency recruitment letter (see Appendix A) was sent via email to the program's director or clinical director. Of the agencies that were contacted, two agreed to participate. Permission was obtained from the first agency's program director on January 16, 2021 and from the second agency's executive director on February 1, 2021. Surveys were provided to the program director or clinical director who distributed them to facility counselors. Outpatient programs that agreed to participate in this study recruited the participants who met inclusion criteria.

As of July 27, 2021, only 18 paper surveys had been collected. On January 29, 2022, a change in procedures form was submitted to the Walden University IRB to request that the online option for the survey be discontinued. In the form I stated, "It is no longer feasible for this researcher to include a survey platform that has not been utilized by participants. The survey platform is cost prohibitive, and, to date, zero online surveys have been collected." The request was approved on February 1, 2022. As a result of

extensive recruitment challenges, a change in procedures form was submitted to the Walden University IRB on March 22, 2022, to request approval to extend the recruitment area beyond the Eastern Shore of Maryland. The request was approved on March 23, 2022, and resulted in two additional agencies agreeing to participate. With the exception of slow recruitment, the data collection plan was conducted and completed without other discrepancies from what was outlined in Chapter 3. Between August 7, 2020, and April 20, 2023, 115 surveys were collected. During the data cleaning process, one case was removed from the data set due to incomplete data (answers missing). This resulted in a sample of 114 respondents who completed at least some of the demographic survey questions and TRA survey questions.

A repeated power analyses was conducted using the G* Power calculator v. 3.1.9.6 (see Faul et al., 2009). I did so to determine the statistical power based on the final sample size of 114. The analysis was based on the test family of *F*, using linear multiple regression, fixed models, and R^2 deviation from zero with a post hoc alpha of .05 and effect size of .13 using seven predictors (past injectable XR-NTX use status, gender, age, race, education level, time sober, and employment status) and 114 respondents. For RQ1, the sample size of 114 indicated a statistical power level of 0.77, indicating that there was a probability of finding a statistically significant effect if one existed (see Laerd Statistics, n.d.). For RQ2, the sample size of 114 indicated a statistical power level of 0.79, indicating a probability of finding a statistically significant effect if one existed.

Results

Descriptive Statistics

The descriptive statistics included demographic information specific to the sample of outpatient program participants who participated the study. The additional descriptive statistics were specific to the metrics with respect to attitudes total score and perceptions total score.

Sample Demographics

Of the 114 respondents, most were White (89.1%) and male (64.3%), obtained a high school diploma or equivalent (32.5%), were employed (62.3%), and had never used XR-NTX (79.8%). Table 1 contains the demographic information of the sample who participated in the study. Some demographic variables were recoded into smaller groups before performing analysis of variance. These included work status (employed [employed full-time, employed part-time] and unemployed [unemployed – seeking, unemployed – not seeking, disabled]) and race (White and not White [Alaska Native, American Indian, Asian, Black or African American, Native Hawaiian, Other Pacific Islander, Other]).

Table 1

Demographic Variable Frequencies

Variable	Category	Frequency	Percentage
Work status	Employed	71	62.3%
	Unemployed	43	37.7%
Ethnicity	White	98	89.1%
	Not White	12	10.9%
Education level	Some high school, but not diploma or equivalent	11	5.5%
	High school diploma or equivalent	65	32.5%
	Some college but no degree	26	13.0%
	Associate's degree	5	2.5%
	Bachelor's degree	4	2.0%
	Graduate degree	1	0.5%
Gender	Male	72	64.3%
	Female	40	35.7%
XR-NTX use	Past use	23	20.2%
	No past use	91	79.8%

The mean length of time clean and sober (in days) was 375.23 days, and most reported having 60 days clean and sober. The sample had a mean age of 39 and a range of age from 20 to 70. The standard error of 10.55 suggested that 66% of the participants were between 39 +/- 10.6. The skewness was positive but not very large. There was some skew to the right, suggesting that there were more people at the younger ages in the sample, and the kurtosis was high, suggesting that there was a peak near or to the left of the mean.

Attitudes

Response Frequencies. Cronbach's alpha was run to determine the reliability, or internal consistency, of the overall scale of attitudes. This section of survey questions dealt with the types of things participants might want their counselor to say or discuss when encouraging them to use MAT as part of their treatment plan. These items sought to measure how unimportant or important participants thought it was for their

treatment provider to address the proposed issues to encourage them to use MAT as part of their treatment plan. The 14 items had a Cronbach's alpha score of 0.96, which indicated a high level of internal reliability (see Laerd Statistics, n.d.).

Attitudes Total Score. The overall score of attitudes about encouragement from providers regarding engaging in MAT was calculated by totaling Items 10–23 from the instrument. The score range was 1 (*very unimportant*) to 5 (*very important*). The mean attitudes total score for the sample was 56.26. The average rating for attitudes was 4.0 (*important*).

Differences in Mean Attitudes Total Score by Sample Demographics. Independent *t* tests were completed to analyze demographic information (gender and past XR-NTX use) with attitudes total score. This was done to provide information about the sample and was not used to answer any research questions.

Gender (Males vs. Females). There were 71 male and 40 female participants. Male attitudes total score ($M = 54.86$, $SD = 14.18$) was lower than female attitudes total score ($M = 56.85$, $SD = 11.69$). The Levene's test for equality of variance assumes the groups have equal variance. There was homogeneity of variances for attitudes total scores for males and females, as assessed by Levene's test for equality of variances ($p = .108$). This independent *t* test analysis was completed to determine whether there was a statistically significant difference in attitudes mean scores between males and females. The difference in the attitudes total score between males and females was not statistically significant ($p = .108$).

XR-NTX Use (Past Use vs. No Past Use). There were 22 participants who had used XR-NTX and 91 participants who had not used XR-NTX. Participants who had no past use had higher attitudes total scores (M = 55.76, SD = 13.54) than participants who had used XR-NTX in the past (M = 55.59, SD = 12.40). The independent t test analysis was completed to determine whether there was a statistically significant difference in attitudes mean scores between past use and no past use. The difference in the attitudes total score between past use and no past use was not statistically significant (p = .700).

Perceptions

Response Frequencies. Cronbach's alpha was run to determine the reliability, or internal consistency, of the overall scale of perceptions. These items sought to measure how strongly participants disagreed or agreed with statements about their perceptions and the perceptions of other people they knew regarding the use of MAT as part of their treatment plan. The 15 items had a Cronbach's alpha score of 0.97, which indicated a high level of internal reliability (see Laerd Statistics, n.d.).

Perceptions Total Score. The overall score of perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX was calculated by totaling Items 26–40 from the instrument. The score range was 1 (*strongly disagree*) to 5 (*strongly agree*). The mean perceptions total score (used for the analysis) for the sample was 55.90. The average rating for perceptions was 3.73 (*neutral/important*).

Differences in Mean Perceptions Total Score by Sample Demographics. Independent t tests were completed to analyze specific demographic information (gender and past XR-NTX use) with Perceptions total score. This was done

to provide information about the sample and was not used to answer any research questions.

Gender (Males vs. Females). The Levene's test for equality of variance assumes the groups have equal variance. This independent *t* test analysis was completed to determine if there was a statistically significant difference in Perceptions mean scores between males and females. The difference in the Perceptions total score between males and females was statistically significant ($p = .022$).

XR-NTX Use (Past Use vs. No Past Use). An independent *t* test analysis was completed to determine if there was a statistically significant difference in Perceptions mean scores between past use and no past use of XR-NTX. The difference in the Perceptions total score between past use and no past use was not statistically significant ($p = .305$).

Assumptions Testing

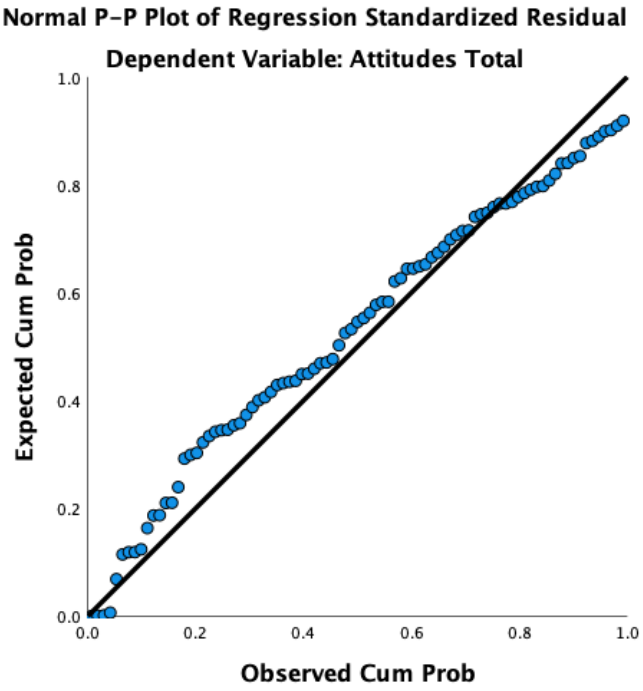
Multiple Linear Regression (Research Question 1)

Before completing a linear regression, it is important to ensure that the assumptions for the statistical test are met. The following are the assumptions of multiple linear regression and whether they are met for research question 1. The assumption of a continuous dependent variable was met, as the dependent variable of Attitudes total score was continuous, ranging from 47 – 101. I also met the assumption of more than two independent variables. The third assumption, that there must be a linear relationship between independent variables and the dependent variables (Field, 2013), was also met as there was a linear relationship noted (see Figure 2). Homoscedasticity was met as noted

by Figure 2. Additionally, there are no significant outliers (Laerd Statistics, n.d.) as indicated in Figure 2.

Figure 2

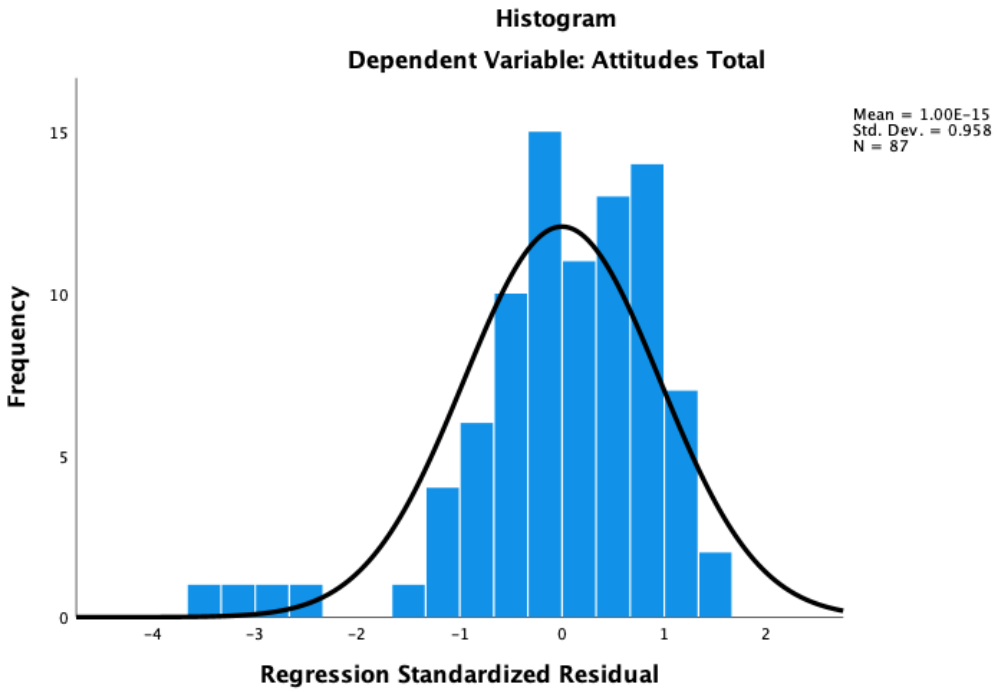
Linear Relationship of Research Question 1 Variables



Multivariate normality, which indicates that there is normal distribution in the data set between the multiple independent variables and dependent variable (Laerd Statistics, n.d.), was met. Figure 3 shows the normal distribution across the data set between the independent variables and dependent variable, with a Durbin-Watson statistic of 1.963, therefore meeting this assumption.

Figure 3

Multivariate Normality



A correlation analysis was conducted to test the assumption of multicollinearity. Multicollinearity occurs when two or more of the independent variables are highly correlated with each other, and should they both be included in linear regression the result could be negatively impacted (Laerd Statistics, n.d.). The results of the correlation analysis, found in Table 2, illustrates that there is no violation of multicollinarity. Tolerance was verified with values no lower than 0.1 and *VIF* values were less than 10 (Laerd Statistics, n.d.). Table 3 indicates that no independent variables had a correlation (*r*) larger than 0.7. Since there were no concerns related to multicollinearity, no variables needed to be removed from analysis. Therefore, this assumption was met. Finally, the

assumption of residuals (errors) being approximately normally distributed (Laerd Statistics, n.d.) was met, as indicated in Figure 4.

Table 2

Correlation Table for Multicollinearity (RQ1)

Variable	Tolerance	VIF
Past XR-NTX use	0.870	1.149
Gender	0.940	1.063
Age	0.905	1.105
Race	0.883	1.133
Education level	0.929	1.076
Length of time clean and sober	0.835	1.198
Work status	0.775	1.290

Table 3

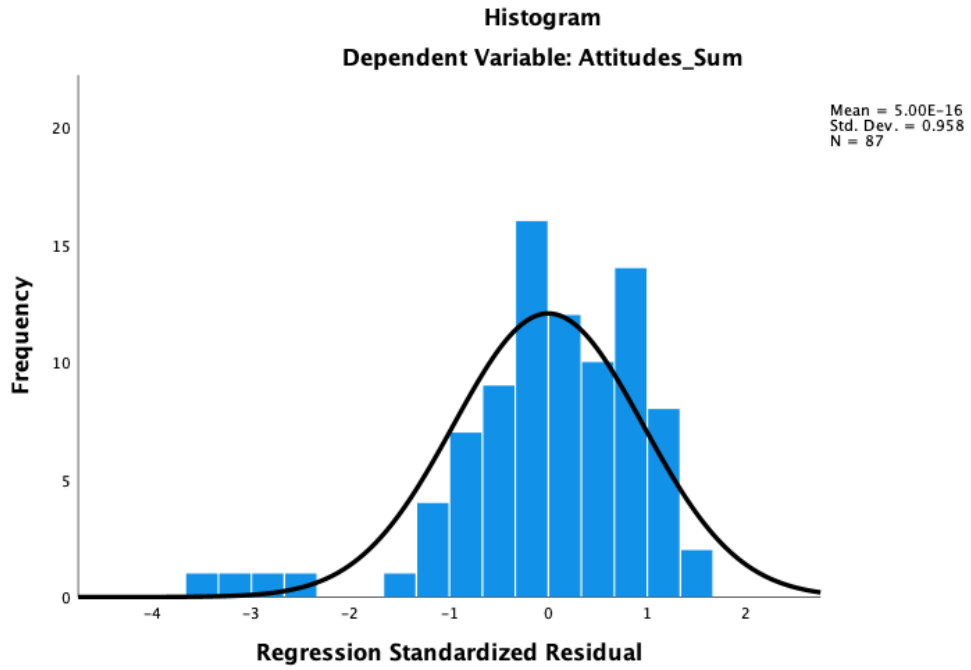
Descriptive Statistics and Correlations for Study Variables (RQ1)

Variable	1	2	3	4	5	6	7	8
Attitudes	-	.07	.01	-.02	-.11	.00	.10	.05
Past XR-NTX use	.07	-	-.06	.11	-.18	.01	.10	.26
Gender	-.01	-.06	-	-.09	-.06	-.12	-.19	-.11
Age	-.23	.11	-.09	-	-.15	.04	.05	.22
Race	-.11	-.18	-.06	-.15	-	.19	.16	.19
Education Level	.00	.01	-.12	.04	.19	-	.15	-.14
Lengths of time clean and sober (days)	.10	.10	-.19	.05	.16	.15	-	-.28
Work status	.05	.26	.11	.22	-.19	-.14	-.28	-

Note. N = 87; **p<.05. **p<.01.*

Figure 4

Normal Distribution Between Independent Variables and Dependent Variable (Attitudes)



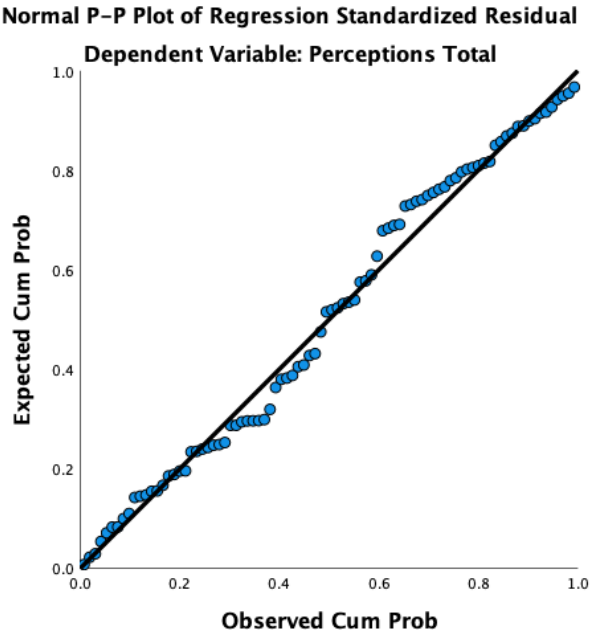
There was homoscedasticity as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. Three outliers were observed in the data, this was assessed by viewing the standardized residual values and studentized deleted residuals. Their values were below -3 *SD*s. There were three leverage values that were in the risky range according to Huber (1981). However, there were no influential cases observed in the data, as assessed by determining if any of the Cook's Distance values were above 1 (Cook & Weisberg, 1982). The assumption of normality was not violated as assessed by visual inspection of the normal P-P plot of regression standardized residual dependent variable.

Multiple Linear Regression (Research Question 2)

Before completing a linear regression for RQ2, it is important to ensure that the assumptions for the statistical test are met. The following are the assumptions of multiple linear regression and whether they are met for research question 2 (RQ2). The assumption of a continuous dependent variable was met, as the dependent variable of Perceptions total score was continuous, ranging from 8 – 62. I also met the assumption of more than two independent variables. The third assumption, that there must be a linear relationship between independent variables and the depended variables (Field, 2013), was also met as there was a linear relationship noted (see Figure 5). Homoscedasticity was met as noted by Figure 5. Additionally, there are no significant outliers (Laerd Statistics, n.d.) as indicated in Figure 5.

Figure 5

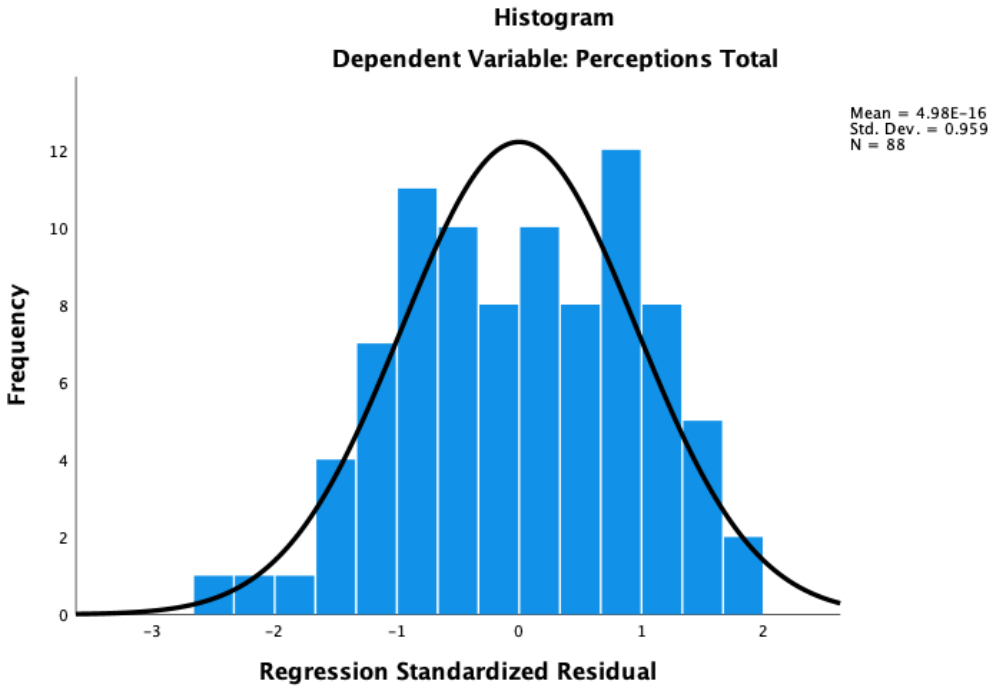
Linear Relationship of Research Question 2 Variables



Multivariate normality, which indicates that there is normal distribution in the data set between the multiple independent variables and dependent variable (Laerd Statistics, n.d.), was met. Figure 6 shows the normal distribution across the data set between the independent variables and dependent variable (Perceptions), with a Durbin-Watson statistic of 1.463, therefore meeting this assumption.

Figure 6

Normal Distribution Between Independent Variables and Dependent Variable (Perceptions)



A correlation analysis was conducted to test the assumption of multicollinearity. The results of the correlation analysis, found in Table 4, illustrates that there is no violation of multicollinarity between the variables and RQ2. Tolerance was verified with values no lower than 0.1 and no *VIF* values less than 10 (Laerd Statistics, n.d.). The results of the correlation analysis can be found in Table 4, which illustrate that there is no violation of multicollinarity between variables and RQ2. There were no independent variables with a correlation (*r*) larger than 0.7). Since there were no concerns related to multicollinearity, no variables needed to be removed from analysis. Therefore, this

assumption was met. Finally, the assumption of residuals (errors) being approximately normally distributed (Laerd Statistics, n.d.) was met, as indicated in Figure 6.

Table 4

Correlation Table for Multicollinearity (RQ 2)

Variable	Tolerance	VIF
Past XR-NTX use	0.892	1.122
Gender	0.934	1.071
Age	0.907	1.102
Race	0.886	1.129
Education level	0.933	1.072
Length of time clean and sober	0.858	1.166
Work status	0.779	1.284

Table 5

Descriptive Statistics and Correlations for Study Variables (RQ2)

Variable	1	2	3	4	5	6	7	8
Perceptions	-	.02	.05	-.12	.17	.17	.07	.13
Past XR-NTX use	.02	-	-.04	.11	-.18	.02	-.01	.27
Gender	.05	-.04	-	-.09	-.07	-.11	-.21	.12
Age	-.12	.11	-.09	-	-.16	.05	.03	.22
Race	.17	-.18	-.07	-.16	-	.19	.16	-.19
Education Level	.17	.02	-.11	.05	.19	-	.11	-.13
Lengths of time clean and sober (days)	.07	-.01	-.21	.03	.16	.11	-	-.29
Work status	.13	.27	.12	.22	-.19	-.13	-.29	-

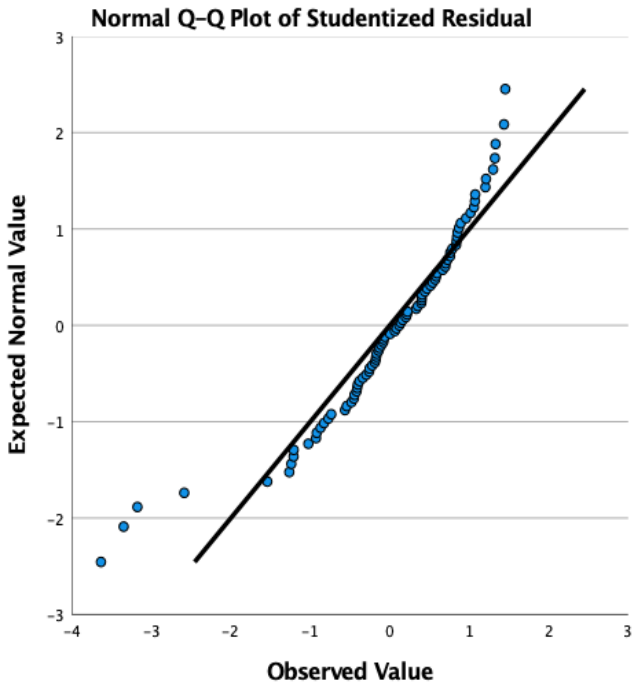
Note. N = 87; **p<.05. **p<.01.*

There was homoscedasticity as assessed by visual inspection of a plot of studentized residuals versus unstandardized predicted values. No outliers were observed in the data, this was assessed by viewing the standardized residual values and studentized

deleted residuals. No values were three standard deviations or greater. There were three cases that had leverage values that were in the risky zone of 0.2 – 0.5 (Huber, 1981). There were no influential cases observed in the data, as assessed by determining if any of the Cook's Distance values were above 1 (Cook & Weisberg, 1982). The assumption of normality was not met, as assessed by a Q-Q Plot (Figure 7). Regression was conducted despite the violation because this statistical test is relatively robust and can yield statistical results despite the violation of normality (Knief & Forstmeier, 2021; Laerd Statistics, n.d.).

Figure 7

Testing for Normality (Perceptions Total)



Research Question 1 Results

A multiple linear regression was conducted to determine the relationship between

demographic factors (gender, age, race, education level, time sober, employment status), past injectable extended-release naltrexone (XR-NTX) use status, and attitudes about encouragement from providers about engaging in medication assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment (Research Question 1).

I used the enter method in SPSS for the multiple linear regression. The multiple regression model did not statistically predict Attitudes Total, $F(7, 79) = 1.428$, $p > .001$, adj. $R^2 = .034$. The R^2 was calculated at .112, indicating 11.2% of the variance in the dependent variable of Attitudes Total is explained by the independent variables of gender, age, race, education level, time sober, employment status, and past injectable extended-release naltrexone (XR-NTX) use status. While the R^2 value is low, it does not mean that the model is a good fit. As can be seen by testing the assumptions, the assumptions were met for the statistical test so we were able to proceed with interpreting the results but need to note that a lot of other factors may need to be considered in future research to determine if other variable influence the R^2 value.

Gender (p=1.000), race (p=0.151), education level (p=0.764), time sober (p=0.150), employment status (p=0.286), and past injectable extended-release naltrexone (XR-NTX) use status (p=0.844) were not related to Attitudes Total score at statistically significant levels (see Table 6). However, age (p=0.009) was related to attitudes about encouragement from providers about engaging in medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment (Attitudes Total) at a statistically significant level. Therefore we

fail to reject the null hypothesis. Regression coefficients and standard errors can be found in Table 6.

Table 6

RQ1 Multiple Linear Regression Results

Variable	*B*	Std. error	Beta	*t*	Sig.
(Constant)	73.986	13.807		5.358	0.000
Past XR-NTX use	0.708	3.598	0.022	0.197	0.844
Gender	0.002	2.786	0.000	0.001	1.000
Age	-0.361	0.134	-0.299	-2.685	**0.009**
Race	-6.433	4.440	-0.163	-1.449	0.151
Education level	0.455	1.513	0.033	0.301	0.764
Length of time clean and sober (days)	0.003	0.002	0.169	1.454	0.150
Work status	3.277	3.047	0.129	1.075	0.286

Note. Dependent variable: attitudes total.

Research Question 2 Results

A multiple linear regression was conducted to determine the relationship between demographic factors (gender, age, race, education level, time sober, employment status), past injectable extended-release naltrexone (XR-NTX) use status, and perceptions about medication assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment (Research Question 2).

I used the enter method in SPSS for the multiple linear regression. The multiple regression model did not statistically predict Perceptions Total, $F(7, 80) = 1.498$, $p > .001$, adj. $R^2 = .039$. The R^2 was calculated at .116, indicating 11.6% of the variance in the dependant variable Perceptions is explained by the independent variables of gender,

age, race, education level, time sober, employment status, and past injectable extended-release naltrexone (XR-NTX) use status. While the R^2 value is low, it does not mean that the model is a good fit. As can be seen by testing the assumptions, the assumptions were met for the statistical test so we were able to proceed with interpreting the results but need to note that a lot of other factors may need to be considered in future research to determine if other variables influence the R^2 value.

Gender (p=.573), race (p=0.209), education level (p=0.112), time sober (p=0.229), age (p=0.157), and past injectable extended-release naltrexone (XR-NTX) use status (p=0.954) were not related to Perceptions Total score at statistically significant levels (see Table 7). However, employment status (p=0.040) was related to perceptions about medication assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment (Perceptions Total) at a statistically significant level. Therefore we fail to reject the null hypothesis. Regression coefficients and standard errors can be found in Table 7.

Table 7

RQ2 Multiple Linear Regression Results

Variable	*B*	Std. error	Beta	*t*	Sig.
(Constant)	35.019	13.753		2.546	0.013
Past XR-NTX use	-0.204	3.504	-0.006	-0.058	0.954
Gender	1.591	2.809	0.062	0.566	0.573
Age	-0.193	0.135	-0.158	-1.430	0.157
Race	5.660	4.468	0.142	1.267	0.290
Education level	2.448	1.521	0.175	1.609	0.112
Length of time clean and sober (days)	0.002	0.002	0.119	1.046	0.299
Work status	6.363	3.053	0.248	2.084	**0.040**

Note. Dependent variable: perceptions total.

Summary

In Chapter 4, I discussed the data collection, results of the study and data analysis. Data analysis was conducted on 114 completed surveys. The data was entered into an Excel spreadsheet and imported into SPSS Version 28 software. Statistical analysis was calculated for descriptive and inferential data. For research question 1, age ($p = .009$) is correlated to attitudes about encouragement from providers about engaging in medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX at statistically significant levels. R^2 for the overall model was 11.2% with an adjusted R^2 of 3.4%.

For research question 2, work status ($p = .040$) was related to perceptions about medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment at a statistically significant level

but the null hypothesis was not rejected due to not all independent variables being related to the dependent variable at statistically significant levels. R^2 for the overall model was 11.6% with an adjusted R^2 of 3.9%. Chapter 5 contains an introduction to the study, an interpretation of findings, limitations of the study, recommendations, implications for social change, and a summary and conclusion.

Chapter 5: Discussion, Conclusions, and Recommendations

The purpose of this quantitative cross-sectional correlational study was to examine the relationships between the independent variables of past XR-NTX status and demographic factors (gender, age, race, education level, time sober in days, and employment status) and the dependent variables. The dependent variables were attitudes about encouragement from providers about engaging in MAT and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. A cross-sectional survey was conducted of adult outpatient program participants who were engaged in a MAT who chose not to use injectable XR-NTX in that treatment. Primary data were collected from respondents who were active participants in outpatient substance abuse treatment programs through a paper survey. The data were analyzed using SPSS Version 28. Data analysis was conducted to obtain a better understanding of the relationship between past injectable XR-NTX use status, demographics (gender, age, race, education level, time sober, employment status), attitudes about encouragement from providers about engaging in MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment, and perceptions about MAT in individuals currently in treatment who chose not to use XR-NTX in that treatment.

This study was conducted to provide further information that might be used to bridge gaps in services provided to individuals with an opiate use disorder who are engaged in outpatient substance abuse treatment. This study is an important step in addressing barriers to MAT with the use of XR-NTX. Results may provide behavioral health professionals, leaders, and legislators with more information to understand the

relationship between demographic factors, past XR-NTX use status, attitudes about encouragement from providers about engaging in MAT, and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. Results may be used when presenting MAT options to individuals who meet *Diagnostic and Statistical Manual of Mental Disorders* 5 criteria for an opiate use disorder.

The results of Research Question 1 showed that age (p = .009) and attitudes about encouragement from providers about engaging in MAT in individuals currently in a MAT who chose not to use XR-NTX (attitudes total) had a statistically significant relationship. Furthermore, an increase in age of 1 year was associated with a decrease in attitudes total of 0.361. There was a decrease in attitudes total because the slope coefficient was negative.

Past injectable XR-NTX use status, gender, race, education level, time sober, and employment status did not statistically significantly predict attitudes total, $F(7, 79) = 1.428$, p = .206. Therefore, the null hypothesis was not rejected. R^2 for the overall model was 11.2% with an adjusted R^2 of 3.4%, a small size effect according to Cohen (1988). The R^2 was calculated at .112, indicating 11.2% of the variance in the dependent variable of attitudes total was explained by the independent variables of gender, age, race, education level, time sober, employment status, and past injectable XR-NTX use status.

The results of Research Question 2 showed that work status (p = .040) and perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment (perceptions total) had a statistically significant relationship. Work status (employed or unemployed) was correlated with participants' perceptions about

MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment. Past injectable XR-NTX use status, gender, age, race, education level, and time sober did not statistically significantly predict perceptions total, $F(7, 80) = 1.498$, $p = .180$. The null hypothesis was not rejected. R^2 for the overall model was 11.6% with an adjusted R^2 of 3.9%, a small size effect according to Cohen (1988). The R^2 was calculated at .116, indicating 11.6% of the variance in the dependent variable. Perceptions were explained by the independent variables of gender, age, race, education level, time sober, employment status, and past injectable XR-NTX use status.

Interpretation of the Findings

Research Question 1

Previous research indicated that MAT with methadone or buprenorphine is sometimes not the preferred treatment for young people (Krupitsky, 2012). Moreover, in certain populations such as adolescents and young adults, there may also be a stigma associated with receiving opioid agonist treatment in clinics, where the vulnerable young patients with little or no criminal experience can learn negative behaviors from chronic adult patients with criminal experience (Syed & Keating, 2013). In my study, age was correlated with participants' attitudes about the providers' encouragement to engage in MAT. Increases in age were associated with decreases in attitudes total. This adds to the existing literature because previous research suggested that treatment providers have not offered MAT based on the person's age (Krupitsky, 2012; Syed & Keating, 2013).

Research Question 2

As discussed in Chapter 2, opioid dependence has put a financial strain on the United States (Doweiko, 2015; NIDA, 2021). Furthermore, opioid dependence is associated with poor social functioning, economic dependence, and unemployment (Krupitsky, 2012; Krupitsky et al., 2011). Previous research identified employment as a factor contributing to the decision to engage or not engage in various forms of MAT (Kjome & Moeller, 2011; Krupitsky, 2012). MAT with methadone or buprenorphine is sometimes not the preferred treatment for those whose employment may prohibit opioid use (Krupitsky, 2012).

Furthermore, previous research indicated that long-term use of naltrexone is associated with improved employment status (Kjome & Moeller, 2011). Also, naltrexone is more useful in treating opioid dependence in populations with external motivation to remain in treatment, including people in the criminal justice system, physicians, and other individuals with employment in jeopardy (Kjome & Moeller, 2011). My finding that work status was related to perceptions about MAT in individuals currently in a MAT who chose not to use XR-NTX in that treatment (perceptions total) at a statistically significant level supports the research conducted by Kjome and Moeller (2011), which indicated that patients who continue to take oral naltrexone showed improvement in employment status and reduction of legal and social problems stemming from dependence.

Interpretation of Findings Related to Theoretical Framework

Examining results through the lens of the TRA, and given prior research, some potential explanations for the responses can be proposed. TRA suggests that the more

program participants believe that injectable XR-NTX is important and should be administered, the more likely they will be to engage in MAT (Ajzen & Fishbein, 1980). This implies that attitudes and beliefs are related to behaviors. TRA suggests that beliefs are formed from a person's life experiences and knowledge. The individual's beliefs lead to the formation of opinions and impact their reasoning about a behavior (Ajzen & Fishbein, 1980). If someone is unknowledgeable about injectable XR-NTX and has had a negative experience in the past, they will be less likely to use the medication.

The TRA is one of the most common models in predicting health-related behaviors and is used often in health education studies. The TRA suggests that a person's behavior is determined by their intention to perform a behavior, and intention is a function of a person's attitudes and subjective norms. In other words, attitudes and subjective norms shape a person's intention to perform a behavior.

Research Question 1

Attitudes, in the current study, were measured through survey items that examined participants' attitudes about encouragement from providers about engaging in MAT. According to the TRA, attitudes influence intention to perform a behavior (Ajzen & Fishbein, 1980). Thus, the TRA would imply that higher attitudes total scores correlate with engagement in MAT. For RQ1, the mean attitudes total score for the sample was 56.26, and the average rating for attitudes was 4.0 (*important*). Even though all of the program participants were engaged in some other form of MAT, 79.8% had never used injectable XR-NTX. I also found that participants who had no past use had higher attitudes total scores ($M = 55.76$, $SD = 13.54$) than participants who had used XR-NTX

(M = 55.59, SD = 12.40). This suggests that age is a factor influencing attitudes about encouragement from providers about engaging in MAT. Specifically, the attitudes total score decreased as age increased. This result can be explained even though it is not consistent with what the TRA suggests. The sample had a mean age of 39 and a range from 20 to 70. The standard error of 10.55 suggests that approximately 66% of the participants fell between 39 +/- 10.6. Furthermore, my study's sample consisted of more younger participants then older participants. This finding explains why attitudes total score was high even when participants chose not to engage in XR-NTX.

Research Question 2

Subjective norms in the current study were measured through survey items that examined perceptions about MAT. According to the TRA, subjective norms influence intention to perform a behavior (Ajzen & Fishbein, 1980). Thus, the TRA would imply that higher perceptions total scores correlate with engagement in MAT. Because the scores ranged from 1 (*strongly disagree*) to 5 (*strongly agree*), higher perceptions total scores indicate that participants agreed with survey questions. For RQ2, the mean perceptions total score used for the analysis was 55.90, and the average rating for perceptions was 3.73 (*neutral/important*). This study's results suggest that work status is a factor influencing perceptions of outpatient program participants. R^2 for the overall model was 11.6% with an adjusted R^2 of 3.9%, a small size effect according to Cohen (1988). Although the R^2 value was low, it did not mean that the model was a good fit. Furthermore, most demographic variables and past injectable XR-NTX use status were not statistically significant in terms of perceptions about MAT in individuals currently in

a MAT who chose not to use XR-NTX in that treatment (perceptions total). Other factors may need to be considered in future research to determine whether other variable influence the R^2 value.

Limitations of the Study

This study had a number of limitations to its validity, reliability, and generalizability. Because the study was correlational, causation could not be determined. Although age shared a statistically significant relationship with attitudes and work status shared a statistically significant relationship with perceptions, it cannot be said that age caused attitudes to change or that work status caused perceptions to change. Also, this study involved closed-ended questions that limited the discretion of respondents to provide information. It is possible that there were barriers that I did not include in the TRA survey that would have been important, and respondents could not provide that information because of the instrument used.

The sample of respondents also presented a number of limitations. The purposive sample may not have been representative of the population in a number of ways, and given the demographics of the respondents, it is clear that it was not. Several groups were underrepresented in the sample, including African Americans and women. It is unlikely that the results are generalizable to the larger population of outpatient substance abuse program participants. This may have been due to the sampling method, but demographics regarding the population of outpatient substance abuse program participants who chose not to engage in MAT with XR-NTX were not available for comparison. Additionally,

the sample was collected entirely from paper surveys, resulting in a limitation because only those identified by their counselor were able to participate.

Recommendations

There are several recommendations that can be made for further research. Future researchers should consider utilizing a mixed methods approach with open-ended questions. This recommendation would allow respondents to provide more information about their perception and/or experience of barriers to MAT with injectable XR-NTX. It would also provide more insight as to how variables, such as age and work status, influence attitudes and perceptions.

Future studies should target specific groups of individuals or expand the research to larger outpatient groups to gain a more diverse population. Even though participation was open to a diverse population, that diversity was not reflected in those who responded. The respondents were disproportionately employed White males in their 30s who never used XR-NTX. Future researchers should also study outpatient program participants in different regions of the United States. This recommendation is to determine if responses vary by region.

Future research should be conducted to include a comparison group including those who do use injectable XR-NTX. The results of this recommendation could determine what factors predict use of XR-NTX, which could provide behavioral health professionals with valuable insight. It was also determined that the survey tool is a statistically reliable instrument that may be used in the future to further investigate this

topic. Further studies using the survey tool could test the construct validity of the measures (attitudes and perceptions).

Implications

I sought to bring about positive social change through conducting this study in relation to directing future inquiry, informing professional continuing educational efforts, providing information that would assist in addressing barriers, decrease overdose rates by increasing the rate at which outpatient program participants choose to engage in MAT with XR-NTX, and ultimately to improve client care by bridging gaps in service. I was hoping to bring awareness to the reasons why outpatient program participants choose not engage in MAT with XR-NTX. I was also hoping to provide healthcare professionals, leaders, and legislators with more information to understand the relationship between demographic factors, attitudes about encouragement from providers about engaging in medication assisted treatment, and perceptions about medication assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.

As the opiate crisis continues to be a major health issue across the nation, the statistically significant findings of my study, particularly the relationship between age and attitudes as measured by the sum of survey items 10 – 23 (Attitudes Total) (RQ1) and a statistically significant relationship between work status (employed or unemployed) and perceptions as measured by the sum of survey items 26 – 40 (Perceptions Total) (RQ2) demonstrates that these results could be instrumental in addressing gaps in service. This study could positively impact treatment approaches across the United States to reach the

population of opioid addicts who choose not to engage in MAT with the use injectable XR-NTX. In regards to Attitudes, survey questions dealt with the types of things participants might want their counselor to say or discuss when encouraging them to use medication-assisted treatment as part of their treatment plan. My study found that as participant's age increases, their attitudes decrease. This may imply that younger program participants are more impressionable and are open to hearing alternative ways to recover. If treatment providers are aware that attitudes about encouragement from providers about engaging in medication-assisted treatment decrease with age, they could implement interventions focused on improving older program participant's attitudes and maintaining younger program participant's attitudes. Prior research has indicated that an individual's support network influences their decisions (Hewell et al., 2017) and that families seem to be more accepting of injectable XR-NTX (Syed & Keating, 2013). Thus, treatment providers could also encourage their client to include their support network when presenting information about injectable XR-NTX.

In regard to Perceptions, survey questions sought to measure how strongly participants disagreed or agreed with statements about their perceptions and the perceptions of other people they knew regarding the use of medication-assisted treatment as part of their treatment plan. My study found that employed participants have higher Perception Total values than unemployed participants. This may imply that individuals who are employed place more value on the perceptions of other people. Thus, it might be beneficial to include their support network when presenting information about injectable XR-NTX. If treatment providers are aware that employed program participants have

higher perceptions about medication-assisted treatment, they could also incorporate means of keeping or obtaining employment into the program participant's treatment. Ultimately, if treatment providers could incorporate these finding into their client's treatment process they might be more successful at reaching this population, which could also decrease the number of overdose deaths.

This study highlighted a single factor (age) that shared a statistically significant relationship with attitudes about encouragement from providers about engaging in medication-assisted treatment. This study also highlighted a single factor (work status) that shared a statistically significant relationship with perceptions about medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment. That information could be a basis to create educational materials for outpatient substance abuse providers to better reach the populations they serve. Specifically, the importance of having a support network and obtaining or maintained employment could be included in educational materials about injectable XR-NTX.

Since my target population was individuals currently in a medication-assisted treatment who chose not to use XR-NTX in that treatment, further studies to explore the relationship between TRA variables and the reasons why program participants choose MAT with injectable XR-NTX is a reasonable action considering the nature of this problem. While further research to confirm these findings is necessary, it is an initial step in informing the field.

This research study has the potential to influence substance use treatment across the nation. This study could provide different perspectives of awareness and approaches to program implementation in understanding the relationship between demographic variables, TRA variables, and choosing not to engage in MAT with XR-NTX. It could also potentially provide findings to create organizational policies to execute more effective and improved outpatient substance abuse treatment programs.

The opiate epidemic has impacted the lives of countless individuals across the nation. On the Eastern Shore of Maryland, only eight treatment providers offer Vivitrol (Vivitrol, 2015). Two of the listed resources are inpatient providers, one is a primary care office, and five are outpatient substance use facilities (Vivitrol, 2015). More research is beginning to support MAT with the use of injectable XR-NTX, but there are still treatment providers who do not offer this option and outpatient participants who decline this service when it is offered. Therefore, the positive social change implication of this study is that behavioral health providers and policy makers could use the results to inform and develop policies and procedures to improve treatment interventions and educational materials that more effectively present injectable XR-NTX as a viable option for outpatient program participants with an opioid use disorder.

Conclusion

Even though injectable XR-NTX has been found to be beneficial (Vivitrol, 2015), there is a lack of evidence-based research that explores data gathered from outpatient participants who choose not to engage in MAT with the use of injectable XR-NTX. Since, I could not locate other studies that I could exactly compare my study to, I could

not fully support or deny the findings of previous researchers. This study's findings provide important research and should be used to expand on future studies to understand the reasons why program participants choose not to engage in MAT with injectable XR-NTX. Future researchers should build on the underlying factors of why outpatient program participants choose not to engage in MAT with XR-NTX and provide resources to treatment providers that have a positive impact on the opiate epidemic. It will be helpful to include all stakeholders in these efforts (clients, legislators, behavioral health professionals) due to the nature of the problem. The opiate epidemic continues to impact the lives of countless individuals across the nation and drains our economy of valuable resources. Thus, this research study would contribute to the literature and help outpatient providers reach those who decline the service.

An individual engaged in outpatient treatment for addiction to opiates' attitudes and perceptions of barriers are likely to impact whether or not they will engage in MAT with XR-NTX. These treatments often provide the best outcomes for clients who are engaged in substance abuse treatment. Thus, their use is important when treating individuals with substance use disorders. However, the opiate pandemic continues and a full understanding of the attitudes and perceptions of barriers is beneficial in ensuring that more lives are saved. This correlational study provided quantitative data between the relationships of demographics and past XR-NTX, and attitudes about encouragement from providers about engaging in medication assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment and perceptions about medication assisted treatment in individuals currently in a

medication-assisted treatment who have chosen not to use XR-NTX in that treatment. This study provided a few key points that may provide some benefit to the knowledge base surrounding MAT with XR-NTX in outpatient settings. As program participants age, their attitudes might change. Also, a program participant's perceptions about MAT are impacted by their work status. These findings should be followed up on with a larger sample that can be generalized to the entire population. Furthermore, the Theory of Reasoned Action appeared to be appropriate theoretical framework for this study and as indicated in Chapter 5, it was possible that multiple levels of the framework were activated.

In hoping to bring awareness to the reasons why outpatient program participants refuse life saving medications, this study was aimed to provide behavioral health professionals, leaders, and legislators more information to understand the variables that influence people's actions. This study has the potential to provide different perspectives of awareness that might influence program development. More so, (1) this study can potentially provide findings to assist with creating policies that impact the delivery of MAT to outpatient program participants; (2) contribute to our nation's financial wellbeing (decrease recidivism); (3) decrease morbidity; and (4) provide the appropriate resources, support, and education to outpatient program participants and behavioral health professionals.

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Appendix A: Agency Recruitment Letter

Subject Line: Participants being sought for a quantitative research study

Date:

Dear _____,

My name is Heather Schultz and I am a Ph.D. student at Walden University looking for participants for a research study. As per our phone conversation, your agency has been identified as an outpatient substance abuse treatment provider on the Eastern Shore of Maryland. This study is being conducted to determine reasons why program participants choose not to engage in medication assisted treatment (MAT) with the use of injectable extended-release Naltrexone (XR-NTX). If your agency agrees take part in this study, clinicians at your facility will be asked to administer the survey to their adult clients with opiate use disorders. The survey will take clients about 15 minutes to be complete. To be able to take part in this study, individuals must be adults with an opiate use disorder and be active program participants. If you have any questions about the study, please email me at heather.schultz@waldenu.edu or call me at 410-463-0751 (please do not share this phone number with clients).

> Email is generally not a secure way to communicate sensitive or health related information as there are many ways for unauthorized users to access email. You should avoid sending sensitive, detailed personal information by email. Email should also not be used to convey information of an urgent nature. If you need to talk to someone immediately or would prefer not to receive study communication by email, please utilize the phone number provided above.

I look forward to hearing from you. Thank you for your time and consideration.

Sincerely,

Heather Schultz, LCSW-C
Doctoral Student, Walden University

Appendix B: Recruitment Cover Letter for Participants

Date:

Dear Prospective Participant,

My name is Heather Schultz. I am a doctoral student from Walden University conducting an anonymous survey about why outpatient substance abuse program participants choose not to engage in injectable extended-release Naltrexone (XR-NTX). It is important to examine the reasons why opiate dependent individuals are choosing not to engage in MAT with the use of injectable XR-NTX because the opiate epidemic is a major social problem across the nation. This study aims to add to the literature about why outpatient program participants choose not to engage in MAT with the use of injectable XR-NTX. Your participation is greatly appreciated.

To participate, you must be 18 years or older. The survey is voluntary and should only take about 15 minutes to complete. All surveys are anonymous and confidential. Please answer the questions to your comfort level. While I hope you will answer all the questions, you have the right to skip any questions you are uncomfortable with.

Survey responses collected via mail will be kept in a locked file cabinet.

The results will be reported to the group of respondents as a whole and made available through the agency at which the participant is enrolled as a client.

To get a copy of the survey, please call me at 410-463-0751 to provide me with your mailing address. If you do not feel comfortable calling me please ask your counselor for a copy of the survey. Return envelopes and postage will be provided in the lobby area of your agency. Please do not include your return address if you choose to mail me your survey.

> Email should also not be used to convey information of an urgent nature. If you need to talk to someone immediately please contact your counselor.

The agency that provided you with this information is not connected with this study.

Thank you for your consideration.
Sincerely,

Heather Schultz, LCSW-C
Heather.schultz@waldenu.edu

Appendix C: Approval from Survey's Author

From: Tony Roberto <Anthony.Roberto@asu.edu>
Date: March 13, 2019 at 12:00:38 AM EDT
To: Heather Schultz <heather.schultz@waldenu.edu>
Subject: RE: Important Inquiry about Research Survey

Hello Heather, And, thank you for your message. Please feel free to adapt my instrument. I've attached the entire survey to this message for your convenience. We may not have used all of it in that study, but you may find it helpful. Best of luck with your dissertation research… sounds like a worthwhile project. Tony

Appendix D: Survey

INSTRUCTIONS: This survey asks questions about medication-assisted treatment (sometimes referred to as MAT). For the purposes of this survey, medication-assisted treatment is defined as the use of once monthly injectable extended release Naltrexone (XR-NTX) in combination with counseling and behavioral therapies to provide treatment of substance-use disorders. XR-NTX is also commonly known as Vivitrol.

DO NOT WRITE YOUR NAME ON THIS FORM, your answers are to remain anonymous.

1. Does the agency or clinic where you are currently enrolled in treatment provide medication-assisted treatment?
    - ❑ Yes, I attend a clinic or agency that provides medication-assisted treatment on-site.
    - ❑ Yes, I attend treatment at a clinic or agency that incorporates medication-assisted treatment in partnership with a physician or physician group that is not part of our clinic or agency (Such as telemedicine)
    - ❑ No. *End here. Thank you for your participation.*

2. Does the clinic or agency where you are enrolled in treatment have promotional material/information to provide clients about the use of medication-assisted treatment as part of a treatment recovery plan?
    - ❑ Yes
    - ❑ No
    - ❑ Unsure

3. Overall, how unsupportive or supportive is the organization you are currently enrolled in regard to using medication-assisted treatment as part of your treatment plan.
    - ❑ Very Unsupportive
    - ❑ Unsupportive
    - ❑ Neutral
    - ❑ Supportive
    - ❑ Very Supportive

4. Which type of program are you currently enrolled in?
    - ❑ Intensive Outpatient treatment (IOP)
    - ❑ Outpatient treatment (OP)
    - ❑ Other: Please specify _____

5. **How would you describe your work status?**
    - ❑ Employed full-time
    - ❑ Employed part-time
    - ❑ Unemployed – seeking
    - ❑ Unemployed – not seeking
    - ❑ Disabled

6. Did anyone at this clinic talk with you about using medication-assisted treatment as part of your treatment plan?
    - ❑ Yes
    - ❑ No

This section addresses your knowledge, training, and perceptions related to the use of medication-assisted treatment.

7. I have attended in-service workshops, trainings, or read professional publications about the use of medication-assisted treatment to treat substance-use disorders.
    - ❑ Yes
    - ❑ No

8. Overall, I would rate my knowledge of medication-assisted treatment as:
    - ❑ Very Low
    - ❑ Low
    - ❑ Moderate
    - ❑ High
    - ❑ Very High

9. Would you be interested in participating in a training to learn more about the risks and benefits of using medication-assisted treatment as part of your treatment plan?
    - ❑ Yes
    - ❑ No

This section of the survey deals with the types of things you might want your counselor to say or discuss when encouraging you to use medication-assisted treatment as part of your treatment plan.

How unimportant or important do you think it is for your treatment provider to address each of the following issues to encourage you to use medication-assisted treatment as part of your treatment plan?

	Very Unimportant	Unimportant	Neutral	Important	Very Important
10. Effectiveness of medication-assisted treatment (for example, leads to better health, saves lives, etc.)	**1**	**2**	**3**	**4**	**5**
11. Safety of medication-assisted treatment	**1**	**2**	**3**	**4**	**5**
12. Improving self sufficiency as a result of achieving sobriety	**1**	**2**	**3**	**4**	**5**
13. Improving interpersonal relationships as a result of achieving sobriety	**1**	**2**	**3**	**4**	**5**
14. Reduced risk of getting other diseases as a result of achieving sobriety	**1**	**2**	**3**	**4**	**5**
15. Reduced risk of criminal justice system involvement as a result of achieving sobriety	**1**	**2**	**3**	**4**	**5**
16. Dealing with the side effects of medications used in medication assisted treatment	**1**	**2**	**3**	**4**	**5**
17. Improving disposable income as a result of achieving sobriety	**1**	**2**	**3**	**4**	**5**
18. Dealing with transportation challenges of getting to a clinic that provides medication assisted treatment on a regular basis	**1**	**2**	**3**	**4**	**5**
19. Dealing with enrolling in a medication-assisted treatment program	**1**	**2**	**3**	**4**	**5**
20. Paying for medication-assisted treatment	**1**	**2**	**3**	**4**	**5**
21. Dealing with stigma related to taking medication	**1**	**2**	**3**	**4**	**5**
22. Helping clients differentiate between medication-assisted treatment and other forms of drug use	**1**	**2**	**3**	**4**	**5**

23. Helping clients see similarities between medication-assisted treatment and other forms of medication used to treat other chronic conditions such as diabetes or asthma	**1**	**2**	**3**	**4**	**5**

This section asks how you feel about your treatment provider encouraging you to use medication-assisted treatment as part of your treatment plan.

25. To me, having my treatment provider encouraging me to use medication-assisted treatment as part of my treatment plan is *(check all that apply):*

Very Bad	**Bad**	**Neither Bad or Good**	**Good**	**Very Good**
Very Harmful	**Harmful**	**Neither Harmful or Helpful**	**Helpful**	**Very Helpful**
Very Useless	**Useless**	**Neither Useless or Useful**	**Useful**	**Very Useful**

This section asks some questions about your perceptions and the perceptions of other people you know regarding the use of medication-assisted treatment as part of your treatment plan. Please indicate how strongly do you disagree or agree with each statement.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
26. It is easy for me to effectively encourage my peers in treatment to use medication-assisted treatment as part of their treatment plan.	**1**	**2**	**3**	**4**	**5**
27. Being encouraged to use medication-assisted treatment as part of my treatment plan is an effective way of getting me to do so.	**1**	**2**	**3**	**4**	**5**
28. Using medication-assisted treatment as part of a treatment plan is a good way to treat substance-use disorders.	**1**	**2**	**3**	**4**	**5**
29. I intend to encourage my treatment peers to use medication-assisted treatment as part of their treatment plans in the future.	**1**	**2**	**3**	**4**	**5**

30. Most people who are important to me think that I should use medication-assisted treatment as part of my treatment plan.	**1**	**2**	**3**	**4**	**5**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
31. Encouraging my peers to use medication-assisted treatment as part of their treatment plan is a useful way to get them to do so.	**1**	**2**	**3**	**4**	**5**
32. I am capable of effectively encouraging my peers to use medication-assisted treatment as part of their treatment plan.	**1**	**2**	**3**	**4**	**5**
33. I feel effective in communicating accurate information about the use of medication-assisted treatment to my peers.	**1**	**2**	**3**	**4**	**5**
34. Using medication-assisted treatment as part of a treatment plan is a valuable way to treat substance-use disorders.	**1**	**2**	**3**	**4**	**5**
35. I feel effective in my ability to persuade my peers to use of medication-assisted treatment.	**1**	**2**	**3**	**4**	**5**

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
36. Most counselors who are important to me want me to encourage my peers to use medication-assisted treatment as part of their treatment plan.	**1**	**2**	**3**	**4**	**5**
37. I am able to effectively encourage my peers to use medication-assisted treatment as part of their treatment plan.	**1**	**2**	**3**	**4**	**5**
38. Using medication-assisted treatment as part of a treatment plan is an effective way to treat substance-use disorders.	**1**	**2**	**3**	**4**	**5**
39. My counselor encouraging me to use medication-assisted treatment as part of my treatment plan is a good way to get me to do so.	**1**	**2**	**3**	**4**	**5**
40. I plan to encourage my peers to use medication-assisted treatment as part of their treatment plans in the future.	**1**	**2**	**3**	**4**	**5**

This section asks questions about current and past behaviors regarding engagement in medication-assisted treatment.

41. In the past have you ever engaged in medication-assisted treatment (MAT) with the use of methadone (MMT)?
    - ❑ Yes
    - ❑ No

42. If yes, how satisfied or dissatisfied were you with this form of MAT?

Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
1	**2**	**3**	**4**	**5**

43. In the past have you engaged in MAT with the use of bupenorphine (BUP)?
    - ❑ Yes
    - ❑ No

44. If yes, how satisfied or dissatisfied were you with this form of MAT?

Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
1	**2**	**3**	**4**	**5**

45. In the past have you ever engaged in MAT with the use of oral naltrexone?
    - ❑ Yes
    - ❑ No

46. If yes, how satisfied or dissatisfied were you with this form of MAT?

Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
1	**2**	**3**	**4**	**5**

47. In the past have you ever engaged in MAT with the use of injectable extended-release naltrexone (XR-NTX)?
    - ❑ Yes
    - ❑ No

48. If yes, how satisfied or dissatisfied were you with this form of MAT?

Very Dissatisfied	Dissatisfied	Neutral	Satisfied	Very Satisfied
1	**2**	**3**	**4**	**5**

49. Of the medications listed above, which is your preference?

    _____

This section asks questions that will help us describe the people who complete the survey.

50. Gender:
- ❑ Male
- ❑ Female
- ❑ Transgender
- ❑ Other

51. How old are you?
_____ years old

52. Are you Hispanic or Latino/a?
- ❑ Yes
- ❑ No

53. Which of the following best describes you? **(Check all that apply.)**
- ❑ Alaska Native
- ❑ American Indian
- ❑ Asian
- ❑ Black or African American
- ❑ Native Hawaiian
- ❑ Other Pacific Islander
- ❑ White/Caucasian
- ❑ Other (*please specify*): _____

54. Highest level of education achieved:
- ❑ Some high school, but no diploma or equivalent
- ❑ High school diploma or equivalent
- ❑ Some college but no degree
- ❑ Associate's degree
- ❑ Bachelor's degree
- ❑ Graduate degree

55. How long have you been clean and sober?
_____ days
_____ months
_____ years

56. Do you consider yourself to be a person in recovery?
- ❑ Yes
- ❑ No

57. What is the five-digit ZIP code of the agency where you attend treatment?

_____

58. Who referred you to treatment?

- ❑ Yourself
- ❑ Your family, friends, or loved ones
- ❑ Parole
- ❑ Probation
- ❑ Attorney/Lawyer
- ❑ Drug Court
- ❑ Family Services
- ❑ Department of Social Services (DSS/CPS)

Appendix E: Variables

Independent variables:

- Past XR-NTX status (Past Behavior)
- Demographic factors (gender, age, race, education level, time sober in days, and employment status)

Dependent variable:

- Attitudes about encouragement from providers about engaging in medication-assisted treatment
- Perceptions about medication-assisted treatment in individuals currently in a medication-assisted treatment who have chosen not to use XR-NTX in that treatment.