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Referral and Treatment Settings for Pregnant Women

Linda D. O'Daniel
Walden University

Walden University

College of Health Sciences

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Linda O'Daniel

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Eric Riedel, Ph.D.

Walden University

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Abstract

Referral and Treatment Settings for Pregnant Women

Experiencing Drug and Alcohol Addiction

by

Linda O'Daniel

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

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Abstract

Drug and alcohol addiction in pregnant women is a significant public health issue. The purpose of this study was to assess drug and alcohol addiction in pregnant women and the setting in which they sought service or treatment to determine whether U.S. census regions and race data could predict the type of addiction service or treatment that pregnant addicts chose. The theories of self-efficacy, cognitive behavioral therapy, and rational emotive behavioral therapy were used as the theoretical framework for this study. The research questions were used to examine whether there was a relationship between the source of addiction treatment referral and the type of addiction service or treatment setting for pregnant addicts that reside in the United States at the time of their initial admission for treatment. This quantitative study used archival data from the 2012 Treatment Episode Dataset – Admission from the Substance Abuse and Mental Health Services Administration. Data analysis included the Chi square (χ^2) test of independence and a multinomial regression. There was a significant relationship ($p < .001$) between the source of treatment program referral and type of service/treatment setting for pregnant women who were diagnosed with only an alcohol addiction and both an alcohol and illicit drug addiction. U.S. census region and race did predict the type of addiction service/treatment setting for pregnant addicts diagnosed with an alcohol addiction, as well as those diagnosed with a drug addiction, at the time of treatment admission. Results from this study can be used to address an under researched area of addiction treatment and could aid in changing the behaviors of pregnant addicts, thereby potentially promoting positive social change.

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Dedication

To my mom, who has struggled with alcohol addiction. She has shown me that addiction is not simply a trend, but a disease that affects the entire family system and which continues to benefit from continued research.

Acknowledgments

I would like to thank the academic staff at Walden University who have helped me to envision future development of social change by saving a population of pregnant addicts and their exposed developing fetuses. A population of pregnant addicts are part our next generation and could benefit from study results to possibly help end the practice of addiction.

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Chapter 1: Introduction to the Study

Introduction

Addiction treatment is an important aspect of addiction research on pregnant women who continue to use alcohol and illicit drugs during treatment (Niccols et al., 2010). As such, this study addresses the problem of addiction and pregnancy, and the choice of treatment programs for the pregnant addict. The use of treatment programs and the choices made by pregnant addicts is a controversial research topic that could benefit from a quantitative study. The results of such a study could provide treatment solutions to decrease or eliminate pregnant addicts' addictions. Gopman (2014) indicated that the use of illicit drugs and substances could complicate pregnancy, resulting in miscarriages, early term pregnancies, placenta abruption, and excessive bleeding. The author also identified that the pregnant addict's age impacts treatment outcomes: the age and the frequency of illicit drug use helps clinicians to develop addiction treatment options that can have positive impacts on treatment outcomes for both the pregnant addict and the developing fetus (Gopman, 2014).

Addiction during pregnancy can be perceived as a social, political, and personal health issue resulting in negative impacts that affects the general public, women, medical, mental health professionals and the pregnant addict. Addiction, pregnancy, and addiction treatment are continuously subjected to social stigma that could interfere with a clinician's ability to provide effective treatment options that align with the pregnant addict's mental or medical health needs (Gopman, 2014). When a pregnant woman is faced with the ultimate goal of achieving addiction

treatment, her vulnerability and sensitivity is at its peak. Addiction should not be looked upon as a single deficit of a pregnant addict's character.

I conducted a quantitative study in order to provide a statistical explanation of why certain variables have a greater or lesser invasive impact on treatment referrals and service treatment settings for pregnant addicts. Positive social change could result from this research because information about treatment choices for pregnant women who have an addiction could be useful for developing effective early treatment interventions for pregnant women who use illicit drugs or alcohol. In this chapter, I provide an overview of the problem of addiction and pregnancy, and present the purpose of the study, the research questions, the theoretical framework, the nature of study, and the assumptions, limitations, and significance of this research.

Background

According to the Centers for Disease Control and Prevention ([CDC], 2014), any amount of any type of alcohol consumed at any point during pregnancy or while attempting to become pregnant is unsafe. The CDC analyzed the prevalence rates of alcohol use and binge drinking by both pregnant women and women of childbearing age from 1991 to 2005. The findings showed a high prevalence rate (17.1%) of alcohol usage among pregnant women between ages 35 and 44 (CDC, 2009). The CDC provided this data to healthcare providers to encourage them to ask women of childbearing age about their use of alcohol as part of a routine health assessment. The purpose of this question was to prevent prolonged use of alcohol during pregnancy, and to advise

women to abstain from drinking alcohol while pregnant or attempting to become pregnant (CDC, 2009).

The CDC (2012) conducted an additional analysis of the prevalence rates of alcohol use and binge drinking of pregnant and childbearing women between the years of 2006 and 2010. The study drew similar conclusions, cautioning women who alcohol consumption during pregnancy can lead to "fetal alcohol syndrome and other fetal alcohol spectrum disorders (FASDs) that result in neurodevelopmental deficits and lifelong disability" for the developing child (CDC, 2012, p. 534). In 2005, the surgeon general issued an advisory message directing pregnant women and women who want to become pregnant not to use alcohol (CDC, 2012). The CDC provided additional findings that alcohol use was highly concerning for pregnant women ages 35 to 44; 14.3% of these women used alcohol while pregnant, and an estimated total of 51.5% of non-pregnant women consumed alcohol while attempting to get pregnant. This study also reported that 7.6% of pregnant women used alcohol, despite the surgeon general's warning (CDC, 2012).

Addiction affects a pregnant woman's psychological and physiological well- being. Most importantly, addiction affects the brain, providing a scientific explanation of why pregnant addicts are more vulnerable to experiencing prolonged addiction (National Institute on Drug Abuse [NIDA], 2012). According to the NIDA (2012), one's "genetic makeup, age, exposure of drugs, and other environmental influences can have a profound effect on one's addiction and addiction practice" (p. v). Illicit drug and substance abuse is initially one's choice, but addiction is a process over time that hinders one's cognitive ability to seek treatment (NIDA, 2012).

Indeed, addiction "consumes the functioning of the brain and often elud[es] a person's self-control and will power" (NIDA, 2012, p. v). Whether related to alcohol or illicit drugs, addiction is treatable.

My purpose in investigating addiction treatment program referrals and service/treatment settings for pregnant addicts was to fill a gap in knowledge about pregnant women with illicit drug and/or alcohol addiction. I found no information about this topic in the literature. This study was conducted to identify the type of treatment settings and the sources of treatment referrals for pregnant addicts in the United States.

Problem Statement

Current research has shown that there are negative outcomes for pregnant women who enter, but do not successfully complete, substance abuse treatment programs (Jackson & Shannon, 2012; Janisse, Bailey, Ager, & Sokol, 2014). According to Jackson and Shannon (2012), treatment approaches that offer consistent benefits for both the addicted pregnant mother and the developing fetus are more likely to produce positive outcomes. Indeed, Ordean and Kahan (2011) discovered that treatment programs for pregnant women with an addiction benefitted from a "one stop access model" (p. 430) that allowed pregnant women to become involved in and focus on the addiction and the pregnancy holistically. The results indicated that the one-stop model "engage[d] the pregnant addict in comprehensive addiction treatment services" (Ordean & Kahan, 2011, p. 430) that allowed both the pregnant addict and exposed child to obtain treatment. Furthermore, this treatment approach was associated with high prenatal care compliance rates and a reduction in the pregnant addict's drug use (Ordean & Kahan, 2011).

There were also significant differences in the neonatal outcomes of pregnant addicts who used drugs and/or alcohol earlier in their pregnancies and those who did not.

Although there have been several studies conducted on alcohol and illicit drug abuse during pregnancy (e.g. Brecht & Herbeck, 2014; Janisse et al., 2014), the literature presently indicates that there is a critical window open for continued research about addiction treatment approaches during pregnancy (Tzilos, Hess, Kao, & Zlotnick, 2013). In this research study, I aimed to address a gap in the literature by examining treatment referrals and settings for pregnant addicts in the United States. Addressing the existing gap in literature is necessary to effectively utilize current statistical data and provide an empirical explanation of what clinical researchers do, and what pregnant addicts need to do to change addiction practices (Ferri, 2015). Conclusions from recent research findings from the European Monitoring Center for Drugs and Drugs Addiction (EMCDDA) revealed that there continues to be a controversial debate on how to use or understand research findings related to addiction to create appropriate and effective health research agendas that could create positive social change for pregnant addicts" (Ferri, 2015, p. 86).

Addiction, pregnancy, and addiction treatment are public health issues that hinder the economic welfare of many communities, families, and health facilities that continue to provide addiction treatment (Gaspari, 2016). Addiction research could be beneficial for pregnant addicts in an attempt to improve addiction treatment outcomes derived from research findings. Research results reveal statistical findings that identify high or low addiction prevalence rates for pregnant women that has an addiction to alcohol or drugs. Research that identifies a relationship between

addiction practices and addiction treatment can identify the possibility of drug/alcohol abuse and addiction for pregnant addicts. Research, therefore, may have a positive impact on addiction treatment (Gaspari, 2016).

Purpose of the Study

The purpose of this cross-sectional study was to assess the drug and alcohol addiction in pregnant women and the setting in which they sought service or treatment to determine whether U.S. census regions and race data could predict the type of addiction service or treatment that pregnant chose. In addition, I sought to determine if U.S. census region and race data predicted the type of addiction service that pregnant addicts would receive or the treatment setting in which they would receive it.

With this study, I aimed to add to the knowledge about pregnant women who struggle with drug or alcohol addiction. This study may contribute to the professional practices of addiction treatment for the population of pregnant women who are addicted to alcohol or illicit drugs, and it provides useful statistical data that will help researchers identify the prevalence rates of particular variables that influence pregnant women's addiction practices. This study provides information about treatment choices for pregnant women with an addiction, which could be useful for developing effective early addiction treatment interventions for those women. The study's results may help addiction treatment providers refer pregnant addicts to various service and treatment settings to educate and provide them with treatment resources that will explain the relationship between the influential and consistent variables that cause addiction.

Research has identified that a significant relationship between public health issues related to drug and alcohol addiction, pregnancy, and addiction treatment for pregnant women or women of reproductive age who are prone to developing an addiction to either alcohol or illicit drugs exists (McLafferty et al., 2015). Recent research has shown that addiction, pregnancy, and addiction treatment present "many clinical challenges for health care providers," including pregnant addicts developing an ongoing drug/alcohol addiction, inadequate access to mental/medical health care, and multiple legal consequences (McLafferty et al., 2015, p. 115).

Researchers have defined effective addiction treatment for pregnant addicts, identified the causes of addiction, shown how addiction treatment programs for pregnant addicts have improved (McLafferty et al., 2015). More research is needed to understand and eliminate drug and alcohol addiction in pregnant addicts, and discussions may lead to effective research that could improve their lives. Research is needed to better prepare addiction treatment clinicians to engage effectively with pregnant addicts in their care and eliminate the cycle of drug addiction, high-risk pregnancy, and poor addiction treatment (McLafferty et al., 2015).

Research Questions and Hypotheses

The research questions and hypotheses for this study were:

RQ1: For pregnant women with an alcohol addiction in the year 2012, was there an association between the source of treatment program referral and the type of service treatment setting at the time of admission for addiction treatment?

$H_0$1: For pregnant women with an alcohol addiction in the year 2012, there was no association between the source of treatment program referral and the type service treatment or setting at the time of admission for addiction treatment.

$H_1$1: For pregnant women with an alcohol addiction in the year 2012, there was an association between the source of treatment program referral and the type of service treatment or setting at the time of admission for addiction treatment.

RQ2: For pregnant women with an illicit drug addiction in the year 2012, was there an association between the source of treatment program referral and the type of service treatment or setting at the time of admission for addiction treatment?

$H_0$2: For pregnant women with an illicit drug addiction in the year 2012, there was no association between the source of treatment program referral and the type service treatment or setting at the time of admission for addiction treatment.

$H_1$2: For pregnant women with an illicit drug addiction in the year 2012, there was an association between the source of treatment program referral and the type of service treatment or setting at the time of admission for addiction treatment.

RQ3: For pregnant addicts with an alcohol addiction in the year 2012, did U.S. Census region and race data predict the type of addiction service or treatment setting for pregnant addicts?

H_0 3 For pregnant addicts with an alcohol addiction in the year 2012, the U.S. Census region and race data did not predict the type of addiction service or treatment setting for pregnant addicts.

$H_1$3: For pregnant addicts with an alcohol addiction in the year 2012, the U.S. Census region and race data did predict the type of addiction service/treatment setting for pregnant addicts.

RQ4: For pregnant addicts with an illicit drug addiction in the year 2012, did U.S. Census region and race data predict the type of addiction service treatment setting for pregnant addicts?

H_0 4 For pregnant addicts with an illicit drug addiction in the year 2012, U.S. Census region and race data did not predict the type of addiction service/treatment setting for pregnant addicts.

$H_1$4: For pregnant addicts with an illicit drug addiction in the year 2012, U.S. Census region and race data did predict the type of addiction service/treatment setting for pregnant addicts.

Theoretical Framework

In this research, I used three behavioral theories to develop a substantial theoretical framework for examining addiction treatment referral services and service treatment settings for pregnant addicts that have an addiction to alcohol or illicit drugs. In this section, I will provide an overview of these theories, which I discuss in more detail in Chapter 2.

Bandura, Beck, and Ellis provide three evidence-based theoretical approaches that I used as the framework for this study. All three theorists believe that cognition changes an individual's behavior, resulting in a new thinking process (Cox, 2005). More specifically, Bandura's (1977) theory of self-efficacy provides an "integrative theoretical framework to help explain and predict

psychological changes achieved by different modes of treatment" (p. 191). Bandura's (1977) theory of self-efficacy was created from the concept of believing in one's capabilities to accomplish a goal in order to self-manage life situations that hinder one's lifestyle, such as addiction. I used Bandura's theory of self-efficacy to measure the pregnant addict's behavioral changes regarding addiction and treatment, and the treatment referral process.

Beck's (1993) theory of cognitive-behavioral therapy (CBT) provides an explanation for the human thought process. Beck's (1993) theory of CBT provides a different perspective compared to the theory of self-efficacy because CBT focuses on individuals' thought processes. CBT improves a disorder by providing treatment derived from a "system of psychotherapy that is coherent, testable by theory in order to provide a therapeutic change" (Beck, 1993, p.61).

Ellis's (1957) theory of rational emotive behavioral therapy (REBT) provides an explanation of why clinical providers who provide addiction treatment are successful when they include treatment approaches that help to adjust participants' behaviors and ways of thinking as part of treatment. The theory of REBT is similar to CBT. REBT is recognized for its ability to developing positive and conducive solutions for the individual to self-rationalize dysfunctional beliefs into rational solutions (Ellis, 2005). While CBT's goal is to educate individuals to "investigate their own beliefs" about their addiction, REBT aims to teach individuals to seek and identify irrational and dysfunctional behaviors—such as addiction practices—in order to make positive, rational, and functional changes to become self-sufficient (Ellis, 2005, p. 182).

Ellis and Beck's theories are useful to explain pregnant addicts' addiction behaviors as they relate to this study's purpose. CBT mainly focuses on individual beliefs, attitudes, and

values unlike REBT, which focuses on “stimuli and responses” (Ellis, 2005, p. 184). CBT gives the individual choices to develop rational strategies, unlike many other therapies (Ellis, 2005). REBT educates individuals to be accountable for their behavior that is “limited by their biological nature and history, which is considerably less determined” initially than the “orthodox” methods (Ellis, 2005, p. 184). All three theories can provide an explanation for the pregnant addict’s cognition process, where the addict is viewed as a change agent who influences her own addiction behavior (Cox, 2005).

In this study, I expanded on these three theories in relation to addiction. Specifically, I aimed to show how CBT and REBT can be used in combination to educate individuals about addiction and help suppress addiction among pregnant addicts. Self-efficacy plays a significant role in this study’s theoretical framework, as it does in the literature on substance abuse treatment outcomes and risk reduction behaviors (Bandura, 1977; 1999) by showing how individual levels of self-motivation can lead a person to self-actualize or self-measure his or her capability to reduce addiction behavior. As I show in more detail in Chapter 2 , I used self-efficacy, CBT, and REBT as theoretical models for this study because they have proven useful in changing behaviors for individuals and groups facing addiction (Cox, 2005).

Nature of Study

In this study, I examined the relationship between the source of treatment program referral and the type of service treatment setting at the time of admission for pregnant women in

the United States with an addiction to illicit drugs or alcohol. The use of a cross-sectional method was most beneficial to obtain archival data and investigate the variables as they relate to addiction and pregnancy. A cross-sectional method is often used in psychiatric research to provide longitudinal interferences about the disease process of alcohol and illicit drug addiction (Kupfer, 2014). My use of this method provided the results for the research questions.

By identifying consistent trends in treatment program referrals and settings for pregnant women, I aimed to fill a gap in the literature. The independent variable analyzed in this study was the source of treatment program referral, and the dependent variable was the type of service treatment setting. Data included archival information from the 2012 SAMHSA Treatment Episode Dataset–Admission (TEDS-A). Data analysis was conducted using the Chi square (χ^2) test of independence and multinomial regression analysis.

Definition of Terms

Addiction: A compulsive and continuous practice or behavior derived from illicit drugs or alcohol use, or both, that results in severe brain injuries (American Society of Addiction Medicine, 2011).

Illicit drugs: Marijuana, cocaine, crack, and psychotherapeutic drugs such as pain pills, stimulants, and sedatives (U.S. Department of Health and Human Services, 2013).

Substance abuse: The consistent misuse of any illegal or legal harmful substance used for intoxication, stimulation, or narcotic effects (Oxford Dictionary, 2012).

Assumptions

For the purpose of this study, I assumed that the data collected by SAMHSA was accurate. I also assumed that the state facilities in this study submitted data accurately and in a timely manner. This accurate submission allowed data to be reported and analyzed monthly to determine the variables that impact pregnant addicts' addiction and treatment. Archival data was used to limit the generalizability of the research findings and ensure homogeneity among the various variables being tested (Field, 2013).

Scope and Delimitations

There continues to be a need for effective treatment approaches to support pregnant women who are struggling with drug and alcohol addiction. The archival data that I used in this study reflects a population of pregnant women with an alcohol or drug addiction who may have been involved in treatment. Data about healthy, pregnant women who did not have an alcohol or drug addiction were excluded from this study. Utilizing archival data about pregnant addicts limited the generalizability of the research findings to this specific population of pregnant women.

Lindesmith's (1938) sociological theory of addiction (1938) and Robinson and Berridge's (2001) incentive sensitization theory for addiction were related to this study's theme but were not used. Lindesmith's (1938) theory investigated the nature of illicit drug use—particularly opiate addiction—while providing a theoretical explanation for the addict's physical reaction to and the psychological experience of opiate use. Lindesmith's theory provides a theoretical explanation for the correlation between the addict's phenomenological reasoning for illicit drug use and the physical acts and ramifications of addiction (Lindesmith, 1938). This theory is most useful for

understanding why an individual who becomes a frequent user of illicit drugs cannot skip dependence and becomes an addict, and it stresses that addiction is not a single event but rather a learning process that extends over time. A conscious effort is necessary to eliminate physical complications of ending addiction, such as withdrawal symptoms (Lindesmith, 1938).

Berridge and Robinson (2001) developed the incentive sensitization theory for addiction. This theory states that addiction begins from from the physical action of stimulating a person's dopamine. This theory differs from Lindesmith's (1938), which viewed addiction as a combination of physical and psychological experiences. The incentive sensitization addiction theory provides an accurate explanation for the physiological implications of drug use by explaining the four important aspects of incentive-sensitization that influence the cravings for illicit drugs and relapse (Robinson & Berridge, 2011). My decision not to use these theories in this study was based on the desire to use theories better suited to systematically identifying a relationship between variables (Nachmias & Nachmias, 2008).

Limitations

Because this study used archival data from SAMHSA (2010), there were limitations to the organization's data collection methods. This data was extracted by three electronic systems: The Drug and Alcohol Services Information System (DASIS), the Inventory of Substance Abuse Treatment Services (I-SATS), and the National Survey of Substance Abuse Treatment Services (N-SSATS; SAMHSA, 2011). A limitation may exist from previous data collection because the

study data was derived from participants' treatment episodes during drug and alcohol addiction treatment, both at the time of admission and at the culmination of treatment (SAMHSA, 2010). For example, while these the two endpoints were used as markers of when to gather participants' data, they presented limitations concerning the ability to collect data throughout the course of treatment (SAMHSA, 2010).

Further, the admission criteria for participants were limited to during the "initial screening, referral process, and […] waitlist procedure" (SAMHSA, 2010, p. 5). The limitations present during the treatment admission phase also existed during data the timing and collection due to public funding. Reporting agencies received large amounts of public funds for participants who were admitted for addiction treatment and characterized as less severe are admitted more quickly to treatment facilities compared to participants admitted to treatment facilities with less funds (SAMHSA, 2011). The SAMHSA (2010) study also reported that limitations occurred in the "change of provider or type of services, concurrent enrollment into two modalities, and co-dependency criteria" (p.7). Additionally, the process of eliminating and altering data to ensure the confidentiality of participant responses may have produced limited reliability of the research findings. This altering of data may have been in an attempt to eliminate the violations of assumptions for the statistical test used in this study, the Chi square (χ^2) test of independence (Field, 2013).

Significance

In the United States, the number of pregnant women living with an addiction has increased. Pregnant addicts expose approximately 225,000 infants per year to both legal and

illegal substances such as alcohol and cocaine (Keegan, 2010). Addiction to legal and illegal substances can have devastating developmental effects on the developing fetus, and psychological, psychosocial, and biological impacts on the pregnant addict (Keegan, 2010).

According to NIDA (2012), pregnant women with an addiction have a unique disorder because exposure to illicit substances not only affect the pregnant addict physically and mentally, but can also have deleterious long-term effects on the developing fetus. Research has shown that evidence-based treatment and practices help both the mother and exposed child by providing treatment that considers the type of addiction, the addict's strong desire to stop drug use during pregnancy, and the addict's desire for involvement in addiction treatment (NIDA, 2012). Understanding self-motivators for drug use during pregnancy may reveal underlying assumptions that explain why addiction is still a current social issue for pregnant women.

From public health and economic perspectives, the literature shows that addiction is the cause of major disruptions in the family system, has negative impacts on the developing child, and causes major health problems that can destroy an entire community (Elder et al., 2010). In this study, I worked to identify trends in treatment referrals to services and treatment settings for pregnant addicts in the United States. Addiction, pregnancy, and treatment are complex public health topics that require ongoing research in order to fully understand them. This study provides insight into addiction from a public health perspective to help promote positive social change for pregnant addicts in need of treatment.

Moreover, since treatment approaches for pregnant women are controversial and require a conscious decision from the pregnant addict to participate, this research will help to close a gap

in the literature concerning treatment referrals and types of service and treatment settings available to pregnant addicts in the United States. The findings of this study may also inform efforts to create substance abuse prevention services that can promote healthy treatment strategies for mother and child and engage pregnant addicts who want to take part in addiction treatment (Villeneuve et al., 2006).

My rationale for conducting this research was to provide data that can be used to support a population of pregnant addicts by educating addiction treatment providers who are interested in providing new treatment strategies. Implications for this study include improving addiction treatment providers' ability to provide immediate and effective addiction intervention treatments tailored specifically to pregnant addicts. The results from this study may help clinicians acknowledge the need for appropriate referrals to addiction treatment resources, thereby improving the understanding of the variables that influence ongoing addiction. In addition, the study results may provide information pertaining to addiction treatment selections made for and by pregnant addicts, which may be useful for developing effective treatment interventions. Reputable addiction treatment facilities may use this information to adapt current treatment strategies to help end the epidemic of substance abuse by pregnant addicts.

Summary

It is clear that addiction during pregnancy continues to be a public health issue (Milligan et al., 2010). Research that addresses the pregnant addicts' treatment selection choices is limited. Existing research appears to focus mainly on the nature of and phenomenological reasoning for substance use, the psychological effects of alcohol and drug use, and treatment outcomes

(Milligan et al., 2010). The purpose of this quantitative study, which uses archival data from SAMHSA's 2012 TEDS–A, was to determine whether a relationship exists between the source of treatment referral and the type of service or treatment setting used by pregnant women in the United States with a drug or alcohol addiction. Chapter 2 provides an overview of the literature related to the topic of pregnancy and addiction.

Chapter 2: Literature Review

Introduction

The purpose of this quantitative study was to assess the relationship between the source of treatment program referrals and the type of service or treatment setting available to pregnant addicts in the United States. The study focused on women who had an illicit drug or alcohol addiction at the time of admission for treatment in 2012. In addition, I determined whether U.S. census region and race data predicted the type of addiction service or treatment setting that pregnant addicts used. Pregnancy can become more problematic for an addict if a provider's treatment does not simultaneously address the addict and her unborn child. In this chapter, I review the empirical literature on the problem of addiction, treatment, and pregnancy, discuss complications with the availability and choice of treatment programs for the pregnant addict, and present the research questions under investigation. I also discuss the literature review strategy I used, and review the theoretical framework upon which this research was based. This chapter concludes with a synopsis of the literature on evidence-based methodologies that investigate addiction, treatment, and pregnancy.

Literature Search Strategy

This literature review included searching numerous Internet databases such as Medline with Full Text, CINAHL Plus with Full Text, ProQuest Digital Dissertations, Science Direct, NHS Economic Evaluation Database, Database of Abstract of Reviews of Effects (DARE), and the Cochrane Database of Systematic Reviews. I searched these databases through EBSCOhost and the Thoreau research database at Walden University. The Sage Encyclopedias and Research

Methods database was also used to obtain literature to support the theoretical and methodological framework for this study. I also conducted Internet searches to provide the necessary background knowledge for this study. The CDC, SAMHSA, World Health Organization, and the National Addiction and HIV Data Archive Program provided the statistical data on the prevalence of addiction and treatment choices made by pregnant women with an addiction to alcohol or illicit drugs. The keywords and combination of words that were used to search the literature were: *addiction, addiction behaviors, addiction treatment for pregnant addicts, developmental deficits, developmental delays due to addiction, fetal alcohol syndrome, gender differences of addiction, illicit drugs, medical complications due to addiction, mental health complications, pregnancy, pregnant addicts, substance abuse, substance use by pregnant addicts, treatment referrals and illicit drugs,* and *treatment settings and women*. I reviewed over 200 full-text articles published between 1992 and 2014, and selected 54 of them for this literature review.

Theoretical Framework for the Study

In this section, I present literature relating to three separate theoretical contributions by Bandura, Beck, and Ellis. I used these three theoretical frameworks because all three theories are in alignment with one another, and can be used collectively to help guide a pregnant addict involved in addiction treatment through the steps to end her addiction. These frameworks also help researchers understand addiction treatment outcomes. The combination of Bandura, Beck, and Ellis's theories can aid in providing a theoretical and logical explanation for prolonged addiction practices by pregnant women. By using Bandura's self-efficacy theory, Beck's CBT, and Ellis' REBT, I worked to identify the association between the source of addiction treatment

program referrals and types of treatment settings in order to aid in treatment strategies for pregnant addicts.

Bandura's Theory of Self-Efficacy

Self-efficacy is a theory that can be applied to pregnant women with an addiction to alcohol or illicit drugs. Self-efficacy helps to explain why particular addiction treatments are effective for pregnant addicts, and aids in establishing an "individual's belief in their ability to accomplish certain goals" (Cox, 2005, p. 2). Since addiction is a "situational aspect in a person's life," self-efficacy can be used to plan realistic goals at the time of admission and influence the individual to take part in treatment, rather than planning unrealistic treatment goals based solely on other criteria (Cox, 2005, p. 3). Bandura's theory of self-efficacy is derived from social cognitive theory, which can be used to explain why pregnant addicts have accepted the addiction that has created their self- and social-identity (Cox, 2005). Unlike other theories, self-efficacy provides substantial evidence that addiction and pregnancy help to "create the individual without the individual having no say" at all (Cox, 2005, p. 3).

In order for pregnant addicts to benefit from the use of the self-efficacy theory and for individuals to be able to identify their strengths and weaknesses, all six sources of self-efficacy should be introduced during treatment. Self-efficacy can be processed or developed *distally* through a person's past life experience which has made an impression that affects the individual's present and future thought processes and actions (Cox, 2005). Self-efficacy can also present itself *proximally,* which is derived from present influential factors that leave an impression "affect[ing] present and future thoughts and actions" for the individual (Cox, 2005, p.

3). Bandura's theoretical explanation for performance experiences helps the individual to identify the experience of achieving a current or previous goal. The overall experience of achieving personal goals allows the individual to relate to the goal achievement process, which results in high self-efficacy (Cox, 2005).

Alternatively, the *vicarious experience* of self-efficacy develops from an individual attempting to model another's successful performance goal, while unconsciously imagining themselves achieving the same successful goal. The *vicarious experience* helps the individual to develop positive self-perceptions, leading to high self-efficacy (Cox, 2005). This source of self-efficacy could possibly aid in unconscious and conscious thought processing for the pregnant addict leading to the development of positive self-perceptions during treatment. *Imaginal experience* is a process of self-efficacy that is similar to vicarious experiences of self-efficacy. It is an imagined belief, developed by the individual that dictates the level of an individual's self-efficacy (Cox, 2005). This could give the pregnant addict the desire to be free of drugs in order to become self-sufficient and care for herself and her unborn child (Cox, 2005). Finally, *verbal persuasion* comes from extrinsic factors and influences the individual's ability (or inability) to complete a goal (Cox, 2005). The art of verbal persuasion can come from effective communication between the provider and individual during the course of treatment. As such, self-efficacy theory can be applied in any given environment, and this achievement can be accomplished through the mastery of experiences (Cox, 2005).

The theory of self-efficacy is useful for providers in their treatment of pregnant addicts because of its ability to help addicts cope with life stressors. Such coping could be accomplished

by the individual and treatment provider understanding the biophysical social effects of addiction and the psychosocial and biological factors that influence addiction (Cox, 2005). The secondary effect of using self-efficacy in addiction treatment is the support of the pregnant addict's sense of control over her addictive behaviors (Cox, 2005). The theory, in combination with substance abuse treatment for pregnant addicts, could be applied to influence positive parenting skills by developing higher levels of self-efficacy. This leads to the ability to increase the competencies for addiction treatment by providers to adequately provide addiction treatment for pregnant addicts giving birth to babies born exposed to drugs or alcohol (Cox, 2005).

Having the ability to pinpoint one's expectations and personal efficacy can result in the ability to initiate coping skills, become involved in treatment, understand that behavior change is accomplished through self-efficacy, and realize that changing one's behavior requires a tremendous effort despite the consistent obstacles and adverse experiences of addiction (Bandura, 1977). Bandura's theory of self-efficacy is used in current research to explain how addiction happens, how change occurs, and what professionals need in order to devise effective therapeutic strategies to produce significant behavioral changes in addicts (Littrell, 2011). In a recent neuroscience study, the self-efficacy theory provided an accurate picture of why some individuals, such as pregnant addicts, "are compelled to pursue drugs or alcohol" (Littrell, 2011, p. 469).

Bandura (1999) stated that an individual must believe in him/herself in order to produce the desired outcome. These desired outcomes develop from an individual's level of self-efficacy that "promotes desired changes [in] cognitive, motivational, affective, chosen processes" that

influence an individual's longing for positive health outcomes by abstaining from alcohol or drug use (Bandura, 1999, p. 214). The use of Bandura's theory in the development of health promotion efforts provides a multifaceted approach to addressing the connection between self-regulation and the environmental determinants of one's health (Bandura, 1999).

Beck and Ellis' Behavioral Therapy

Beck and Ellis' theories of behavioral therapy provide two other theoretical frameworks for explaining addiction in pregnant addicts who enter addiction treatment. Behavioral therapy, for the purpose of this study, serves as a theoretical explanation as to why pregnant addicts may thrive in their treatment of choice, rather than in a more generalized treatment program. More specifically, CBT may aid in reducing addiction practices and provide a theoretical explanation for pregnant addicts' use of illicit substances. Beck and Ellis concluded that the use of behavioral therapy results in more effective treatment outcomes compared with other treatments such as medication (Anthony, 2005). Ideally, CBT can help pregnant addicts identify traumatic events so they are not solely reliant on emotional responses, but instead are able to detect the central source of their emotional distress and the psychopathology of addiction (Anthony, 2005). Beck also added that self-perception initially develops in one's childhood years and helps shape one's self-identity and perception of his or her world. Beck's theory states that individuals' core beliefs justify their self-identity and perceptions through their "cognitive, affective, and behavioral responses to their environment" (Anthony, 2005, p. 5). This may aid in substance abuse treatment for pregnant addicts because it allows the pregnant addict and provider to understand that core beliefs formulate an individual's intermediate perception of oneself that may result in

an automatic, negative, and reoccurring stigma associated with addiction (Anthony, 2005, p. 5). This automatic response is a key variable that can help to identify a pregnant addict's maladaptive core beliefs about addiction, pregnancy, and treatment. This response also influences an individual's self-esteem and future prospects that may lead to successful treatment outcomes (Anthony, 2005).

Ellis's (1996) development of REBT "stems from the teaching of stoicism" (p. 69). Stoicism is a historical practice that teaches individuals to suppress behaviors, beliefs, and human demandingness through psychotherapeutic methods. Stoicism is used in addiction treatments to pinpoint the fundamental disturbances in individuals' lives (Ellis, 1996). Beck and Ellis's behavioral theories have been used less frequently in addiction treatment research, though they have been identified as useful for helping individuals with addictive behaviors make behavioral changes (Webb, Sniehotta, & Michie, 2010).

The use of CBT and REBT in treatment interventions intended to help an individual make behavioral changes may be helpful for pregnant addicts. Webb et al. (2010) stipulated that the "lack of theoretical underpinning limits the potential" to understand a phenomenological reason for addictive behaviors and limits the effectiveness of an intervention (p. 9). This research gap could be filled by utilizing a combination of theoretical approaches, for instance CBT, and REBT, and self-efficacy, as I have done in this study. All three models could be used in conjunction to instill the desire of an individual to combat addiction. Researchers and service providers may also use this combination to identify and eliminate any negative factors that can

impact the individual's thinking process or perception as it relates to their addiction behaviors and practices.

Gender Insights on Addiction

Because addiction is quite different for women and men, gender is an important factor to consider when conducting addiction research (Brady & Ashley, 2005). Women are more prone to addiction when facing the physical and psychological effects of traumatic events, compared to male addicts (Brady & Ashley, 2005). Pregnancy, childbearing, and labor may be especially traumatic for women with an addiction (Brady & Ashley, 2005). Many women face barriers to treatment, such as the fear of losing their child(ren) due to their substance use, combined with state laws that consider illicit drug or alcohol use during pregnancy as child abuse. The legal requirement for state-mandated providers to report suspected prenatal abuse influences pregnant women with addictions to choose whether or not to seek treatment (Brady & Ashley, 2005, p. 8).

Compared to men with an addiction, women are more socially stigmatized and are expected to be more responsible than men in caring for their child (Brady & Ashley, 2005). Women who have an addiction and are involved in treatment are more likely to care for their child at home or while involved in inpatient treatment services where services are provided for both mother and child (Brady & Ashley, 2005). Samuelsson (2015) indicated that women feel responsible for their developing fetus' well-being. Pregnant women with addictions are also more prone to experiencing guilt, shame, and feelings of being socially exposed (Samuelsson 2015).

Gender insights were important for this study because I had to consider how stigma may result in an unequal distribution of and access to addiction treatment (see Samuelsson, 2015). According to my examination of data from clients' time of admission, gender appears to have an impact on the treatment outcomes based on the variables in question for this study, such as the U.S. census regions data. According to Lal, Deb, and Kedia (2015), women rated lower than men when assessed for admission to substance abuse treatment (3:1). However, gender was not considered further in this study as it was not associated with planned treatment completion.

Addiction During Pregnancy

Research has shown there are negative outcomes for pregnant women who enter, but do not successfully complete, substance abuse treatment programs (Janisse et al., 2014; Zuckerman et al., 1989). According to current research, treatment approaches that offer consistent benefits for the pregnant addict are more likely to produce positive outcomes (Jackson & Shannon, 2012). In the literature, risky behaviors and other identified norms have been associated with devastating results. However, addiction during both pre- and post-pregnancy should be perceived as a disease or pathology and not as a pregnant addict's moral failure (Maguire, 2014). Indeed, prolonged addictive behaviors exhibited by the pregnant addict have been found to develop from various pathophysiological variables (Maguire, 2014).

Research has shown that illicit drug or alcohol use can affect both the mother and the developing fetus (Jackson & Shannon, 2012). However, more research is needed on addiction and pregnancy, particularly among the population of women for whom addiction is a chronic relapsing medical condition (Terplan et al., 2015). Such women face a double dose of social

stigma for both having the addiction and exposing their developing fetus to harmful substances. This leads others to question their ability to effectively care for their child (Terplan et al., 2015). This study supports the "integral interconnectedness of the maternal-fetal dyad" as it relates to addiction, treatment, and pregnancy (Terplan et al., 2015).

The Relationship Between Addiction, Pregnancy, and Treatment

The psychological challenge of fulfilling societal expectations and experiencing discrimination in relation to addiction and pregnancy has historically been a controversial topic that stems from a "quarter century of continuous widespread exposure to illicit drugs" and alcohol (Musto, 1992, p. 12). Attitudes and perceptions of drug use have changed within society: "Those that have lived through the most recent drug epidemic can testify" to the changes of societal and individual perceptions of drug use compared to the 1970s (Musto, 1992, p. 12). For example, the perception of cocaine versus the use of crack use is quite different. Cocaine was initially used between 1880 and the 1930s as a harmless tonic. Federal policies suppressed the devastating effects of cocaine use to the general public (Musto, 1992). The stereotype of a cocaine user includes exhibiting behaviors such as being "anxious, fearful, paranoid, hyperactive, and out of touch with others." Cocaine has continued to be perceived as the most "fear producing drug image to the American public" (Musto, 1992, p. 12). As two 1980 surveys by the NIDA Household Survey and the Drug Use Forecasting show, the use of crack, a substance similar to cocaine, quickly changed the negative perception of cocaine use (Musto, 1992). Both surveys suggested that there was an increased use of cocaine by groups and individuals within lower socioeconomic levels of society (Musto, 1992).

Global perceptions on pregnant addicts' use of alcohol are different but equally controversial when compared to crack and cocaine. Research indicates that any alcohol consumption during pregnancy is unsafe and can cause neurodevelopmental deficits and fetal alcohol syndrome in the developing fetus (Kyskan & Moore, 2005). Yet in some places, alcohol use during pregnancy is considered routine. Alcohol use during pregnancy continues to be a national health issue that raises the attention of governmental officials that work to develop "health policies based from knowledge provided to them by the scientific community" (Kyskan & Moore, 2005, p. 156). Treatment choices for this population are further influenced by society and the public health policy that influences the laws and regulations concerning pregnancy and addiction (Kyskan & Moore, 2005).

There continues to be a national public health concern requiring the repeated investigation of the relationship between drug/alcohol addiction, pregnancy, and addiction treatment for pregnant women. Presenting evidence that can be used for establishing best addiction treatment practices for pregnant addicts appears to be most needed in states where addiction and teen pregnancy are more prone to develop due to the relationship between addiction, abuse, and unwanted pregnancy (Azar, 2012). The city of Milwaukee and the state of South Carolina are now "redoubling their efforts to reduce adolescent birthrates" for teens through the school system. Schools will educate teens that are prone to getting pregnant based on their involvement with, but not limited to, drugs, alcohol, and other environmental factors (Azar, 2012, p. 1837). In the state of Virginia, the Department of Health and Human Services developed a prevention and intervention program that will heighten the awareness of healthy sexual

relationships. The goal of this program is to educate teens about early intervention and prevention methods to reduce adolescent birthrates related to alcohol/drug involvement (Azar, 2012).

This research identified a possible statistical relationship between drug/alcohol addiction, pregnancy, and treatment, which is important "to educate people of interest about [how] possible variables might continue to have a significant influence on addiction practices and behaviors practiced by pregnant addicts. This study will continue to provide needed research findings that are deemed to be effective in meeting drug or alcohol addiction treatment "goals to enhance health care quality, improve health outcomes, and lower health care cost in order for pregnant addicts to gain access to addiction treatment" (Ickovics, 2012, p. 359). Current research has provided results that have proven that health conditions for pregnant women suggests many clinical and psychosocial benefits "if identified by research that will highlight a significant relationship among these factors that continue to hinder a population of pregnant addicts and can be used in addiction treatment to improve individual self-management," "adherence, satisfaction and clinical outcomes" (Ickovics, 2012, p. 359). This research agrees with current research findings on women who are of childbearing age, reside in the United States, and are highly involved in substance use (Terplan et al., 2015).

In 2012, the National Survey on Drug Use and Health reported that over 10 percent of non-pregnant women between ages 15 and 44, compared with 5 percent of pregnant women, engaged in drug use within 30 days of treatment (Terplan et al., 2015). The relationship between addiction, treatment, and pregnancy was most identifiable among pregnant women due to the

addict's age. This was an inverse relationship and identified a decrease in drug use as the pregnant addicts age increased and the pregnancy progressed (Terplan et al., 2015). The National Survey on Drug Use and Health reported a strong relationship for pregnant women who have a drug/alcohol addiction. The survey reported that "women who are 18 years and older fit the criteria for needing substance use disorder treatment," but only 11.2 percent obtained addiction treatment and only 84.2 percent of women were identified as needing treatment (Terplan et al., 2015).

Other research findings also reported that some women did not receive addiction treatment or perceive it as necessary (Terplan et al., 2015). This disparity among pregnant addicts as it relates to the negative revolving relationship can benefit from an acknowledgment of and the discrepancy between pregnant women who are and are not involved in treatment (Terplan et al., 2015).

Epidemiology of Addictive Behaviors for Pregnant Addicts

Treatment planning for pregnant addicts warrants special consideration. There are specific necessary treatment strategies for addressing and eliminating the medical and psychosocial consequences of addiction (Svikis, 2015). Research has proven that best practices for understanding pregnant addicts' behaviors can "benefit from pharmacological and/or behavioral therapies" that are different from therapy that is beneficial for men (Svikis, 2015, p. 326). Literature suggests that the epidemiology of addiction is fostering the field of pharmacogenomics, which presents research findings that help identify effective pharmacotherapies for pregnant addicts (Svikis, 2015, p. 327). Research has shown that pregnant

women who use illicit drugs and obtain addiction treatment during pregnancy are making the right choice. There is evidence that the referral process for providing treatment to pregnant addicts must start with effective screening processes at the time of admission (Terplan et al., 2015).

Effective treatment for pregnant addicts should start with understanding their patterns. The pregnant addict's behavior patterns and an understanding of the disease process of addiction could allow the addict and provider to discuss the epidemiology of addictive behaviors. Pregnant addicts are a hidden public health problem and a global epidemic that would benefit from research in order to develop standard health care practices to eliminate addiction (Nikoo et al., 2015).

Research has illustrated that there is a lack of understanding about the epidemiology of addiction for pregnant addicts and their exposed children to the limited understanding of "economic disadvantages, poverty, homelessness, stigma, violence, sexual and emotional abuse, mental co-morbidities, history of childhood abuse and disrupted family structure, and trans-generational trauma that some pregnant addicts experience" (Nikoo et al., 2015, p. 26). The lack of understanding of addiction and its process is due to the limited data on current trends of substance use among pregnant addicts around the world. Filling this data gap could create sufficient evidence to aid in creating best practices and heighten the standard of care for pregnant addicts (Nikoo et al., 2015).

Medical Complications of Addiction for Pregnant Addicts

Medical complications of addiction for pregnant addicts have increased in the United States. Every year, approximately 225,000 infants are born exposed to illicit substances such as cocaine, alcohol, tobacco, opiates, and amphetamines (Keegan, 2010). According to recent figures, prescription abuse rates during pregnancy range from 5-20 percent (Worley, 2014). Medical complications for the pregnant addict and the exposed child are traumatic, depending on how the pregnant addict perceives her addiction, addiction practices while bearing a child, and the devastating child developmental deficits derived from drug or alcohol exposure. Perceptions of the severity and risks of drug abuse are a key element in routine medical screenings and the preventative education (Keegan, 2010). Without effective medical treatment, addiction in pregnant women may lead to "spontaneous abortions, pre-term births, placental abruption, and congenital anomalies" (Keegan, 2010, p. 175). It is clear that medical complications for pregnant addicts, which can be detected from the physical implications of drug use, are physically harmful for the addict and the developing fetus (Keegan, 2010).

Routine lab checks and medical exams by the provider can help determine the level and consistency of drug use, resulting in appropriate medical treatment (Keegan, 2010). Engagement in specialized medical neonatal services that treat medical complications such as "symptoms of withdrawal, issues of poor feeding, lethargy, mental retardation, growth restriction, low birth weight, and childhood respiratory diseases" for the exposed, developing child can help to achieve positive medical outcomes (Keegan, 2010, p. 175).

Treatment options at the time of admission and during the referral process appear to be very critical for addiction treatment success. Detoxification is a medical treatment that is highly

recommended throughout the entire pregnancy to prevent medical complications such as increased relapse rates, and to help improve maternal and fetal outcomes (Worley, 2014). Questions still arise as to why women continue to use illicit drugs during pregnancy, even while they are involved in treatment and know the outcome of continued use. Prescription drugs do not have a lesser physical effect than cocaine, alcohol, marijuana, or heroin. Substance abuse and addiction have similar physical effects on both the pregnant addict and the exposed fetus, regardless of the type of drug used and its consistency (Worley, 2014).

The use of prescription drugs by the pregnant addict increased by 5 percent in 2010 and 2011, causing negative consequences for both mother and child (Worley, 2014). This increase of illicit drug use and prescription drug use during pregnancy was identified in addicts between the ages of 15 and 44 residing in South America, Europe, and Central America. The prevalence rate of both types of drug use by pregnant addicts increased by "20.9% in women between the ages of 15 and 17" (Worley, 2014, p. 196). These findings are significant for understanding the consistency of prescribed drug use across the U.S. From a total of "400,000 American pregnant addicts that were reported abusing or being dependent on opioids and benzodiazepines," there was a 570 percent increase in medical complications between the years 2000 and 2010. These addicts experienced "respiratory depression due to overdosing on opioids and benzodiazepines, and adverse fetal outcomes such as cardiac defects, cleft palate, fetal death, floppy infant syndrome, and neonatal abstinence syndrome" (Worley, 2014, p. 196).

The type of drug usage can also provide insight into the treatment choices made by both the pregnant addict and provider due to the ability to identify the importance of a nonjudgmental

supportive approach during treatment (Worley, 2014). Research has suggested that the use of a nonjudgmental approach should be a significant goal to help pregnant addicts better understand treatment efficacy, their addiction, and the importance of prenatal care and abstaining from the use of prescription drugs, illicit drugs, or substance use while pregnant (Worley, 2014). Medical complications are a crucial indicator for pregnant addicts to be offered effective addiction treatment choices that are in alignment with individualized healthcare needs. Addiction services that aid in preventing medical complications can be useful if they are designed for the pregnant addict to identify potential medical complications, the use of prescription or illicit drugs, and her involvement in early intervention services to prevent future drug involvement (Worley, 2014).

Mental Health Complications of Addiction for Pregnant Addicts

Addiction practices by the pregnant addict may both result from and influence mental health complications, such as a family and/or an individualized emotional breakdown (Płotka, Narkowicz, Polkowska, Biziuk, & Namieśnik, 2014). Theories that aid in understanding the relationship between mental health and addiction come from the writings of Peirce (1878), James (1907), and Dewey (1920), “who strongly believe that when judging ideas” one could benefit from “considering their empirical and practical consequences.” These consequences influence consistent addiction practices and behaviors that lead to depression, the inability to socialize, or learning disabilities (Tallon, 2013, p. 63). These scholars were highly interested in providing “practical consequences and empirical findings to provide a understanding and a definition for philosophical positions” that could aid in effective treatment choices for addictions that result in dysfunctional mental health complications (Tallon, 2013, p. 63). Such a philosophical position

can help explain pregnant addicts' consistent treatment choices that stem from "active constructive interpretation of their environment" (Tallon, 2013, p. 63).

According to Mead (1934) and Blumer (1969), who developed significant premises that can be applied to understanding pregnant addicts' mental health complications and a reason for their addictions, "human beings react toward things on the basis of their meanings ascribe to those reactions and those same meanings arises out of the social interaction that one such as the pregnant addict has with others and society" (as cited in Tallon, 2013, p. 63). If the pregnant addict and mental health providers understand this premise, these "same meanings that arise out of social interaction" can be modified through treatment. It can also be highlighted as an interpretative process used by the pregnant addict to understand the type of treatment choices used to address mental health complications (Tallon, 2013, p. 63).

Mental complications for the pregnant addict have derived from the use of illicit drugs and substances and have major consequences both during pregnancy and at the time of delivery, which is a crucial time for introductory addiction treatment (Płotka et al., 2014). Recent research suggests that pregnant addicts who use illicit drugs experience damaging mental effects that hinder the central nervous system (Płotka et al., 2014). Pregnant addicts have a higher rate of being diagnosed with mental health complications than pregnant women who do not use illicit drugs or illegal substances. These complications range from having a poor appetite to having "chronic anxiety, depression, psychosis, personality changes, and delusions of paranoia" (Płotka et al., 2014, p. 60).

As stated earlier, excessive consumption of alcohol is a continuous addiction behavior and a practice among pregnant addicts that is harmful for both the mother and the exposed fetus (Płotka et al., 2014). What is sometimes overlooked by the pregnant addict, however, is that alcohol consumption may result in severe mental health complications (Płotka et al., 2014). The evidence regarding alcohol addiction treatment for the excessive use for alcohol during pregnancy demonstrates that the pregnant addict must self-identify with a treatment of choice that will explain the importance of blood alcohol content (BAC). This will help the addict to understand that their fetus' BAC will be identical to their BAC (Płotka et al., 2014). The pregnant addict who uses alcohol excessively is likely to develop psychiatric disorders such as depression and social problems (Płotka et al., 2014).

Drug Treatment Settings and Referral Sources for Pregnant Addicts

The 2012 TEDS-A is a nationwide data system that collects yearly admission data from private and public substance abuse facilities that provide addiction treatment and receive funding. An analysis was formulated for the admission data and sent to the Substance Abuse and Mental Health Data Archive (SAMHSA, 2012). In general, treatment settings for pregnant addicts are not only cost effective, but are also necessary to provide early intervention and prevention methods for addiction. For example, Svikis et al. (1997) analyzed a neonatal intensive inpatient care unit and compared its cost to that of providing outpatient addiction treatment for the pregnant addict and the exposed developing infant. The research concluded that attendance at inpatient treatment settings where the pregnant addict was involved in treatment at the time of delivery resulted in positive clinical outcomes; providing inpatient treatment was cost effective

(Svikis et al., 1997). Svikis et al. (1997) consequently stated that addiction treatment is costly, but a cost savings strategy can be applied to provide addiction treatment for both the mother and infant. Svikis et al. (1997) concluded that in 1997, addiction treatment cost providers at least $4644 per mother/infant. If the cost-effective strategies can be applied in combination with treatment referral processes at the time of admission, a provision of savings in neonatal intensive care addiction services will decrease and the access to care will increase, thereby raising awareness of addiction treatment for pregnant addicts (Svikis et al., 1997).

Treatment settings that were listed in the TEDS-A (SAMHSA, 2012) stipulated that pregnant addicts can be placed in a treatment setting "at the time of admission or transfer" from a no-treatment facility (p. 18). The different types of treatment settings were a "24-hour detoxification in-patient and residential treatment center, rehabilitation service settings that are short-term/long-term within a 30-day period, as well as a 24-hour inpatient service setting in a hospital facility, and lastly, ambulatory treatment settings" (SAMHSA, 2012, pp. 18-19). For the purpose of collecting data that characterizes treatment episodes for substance and illicit drug users, TEDS-A was able to gather data from treatment settings that received funding for addiction treatment at the time of admission in order to provide addiction characteristics and monitor continuing treatment regimens for abusers (SAMHSA, 2012, p. 7).

Drug Treatments for Substance Abuse

Drug treatments for substance abuse have been investigated over the past two decades. The research has shown that prevalence rates for psychological and medical complications, combined with addiction by pregnant and parenting addicts, are similar to the rates for women

who live in the general population (Kelly, Zatzick, & Anders, 2014). Addiction treatment for the parenting addict with mental health or medical complications is becoming more relevant as "prenatal substance abuse screening by obstetricians" increases and is a priority for continued research (Kelly et al., 2014, p. 213).

Gender is additionally recognized as a significant variable in treating pregnant and parenting addicts due to the special needs that women possess in their daily lives (Hser, Evans, Huang, & Messina, 2011). A recent study suggested that pregnant and parenting addicts could benefit long-term from addiction treatment designed for women only as opposed to addiction programs that are designed for both genders (Hser et al., 2011). The study indicated that pregnant addicts who were involved in treatment programs for women only had lower arrest rates, utilized more mental health services, and participated more in treatment in the first year after drug treatment compared to those participating in mixed-gender groups (Hser et al., 2011).

Research has also shown that women-only treatment programs that incorporate childcare services had "improved in retention rates in treatment and short-term rates for post-treatment outcomes" in pregnant and parenting addicts (Hser et al., 2011, p. 120). Additionally, organizational relationships between the provider and the pregnant addict also improved, and better relationships between "prenatal care providers, child protection systems, mental health and other social service systems" created higher retention treatment rates and outcomes for the pregnant or parenting addict (Hser et al., 2011, p. 120).

Questions still arise, such as: What type of treatment do addicts feel is most effective? Which treatment will the pregnant addict choose or be referred to? Why does a population of

pregnant addicts consistently choose a particular treatment approach to address their addiction? Roeyers, Dom, and Vanderplasschen (2014) examined addiction treatment from the pregnant addict's perception and concluded that, "individual differences in one's neurocognitive aspects leads to impulsivity. This finding provides an explanation for treatment choices made by the individual and supports the study's hypothesis that individual differences may explain why individuals with substance abuse disorders are linked to unfavorable addiction outcomes and have difficulty achieving and sustaining abstinence (Stevens et al., 2014, p. 58). This study provides evidence-based results demonstrating that substance abuse treatment is a choice made by the pregnant addict and that choice relies on, but is not limited to, neurocognitive measures of impulsivity that can provide a wealth of information about why pregnant addicts choose one particular treatment over another (Stevens et al., 2014).

Discussion of Studies Related to Topic and Methodologies Used

When examining addiction among pregnant women, quantitative methods can be useful for identifying the impact of the variables in the research (Niccols et al., 2010, p. 3). Analyses of archival data and the use of meta-analysis were performed in a recent study that analyzed a "total of 327 studies that met the eligibility criteria for study inclusion" (Niccols et al., 2010, p. 3). The inclusion criteria included women who were pregnant or parenting, participants who had a substance abuse diagnosis, participants involved in a treatment program that included substance abuse treatment, parenting addicts with at least one child under the age of 16 years, substance abuse treatment designed to exclude men's participation, treatment that did not include a

smoking cessation component, and data that identified mental health complications or other outcomes (Niccols et al., 2010).

Randomization is another type of research strategy that supports a quantitative research methodology; indeed, the use of randomization is one of the strengths of a quasi-experimental design (Nachmias & Nachmias, 2008). For example, a recent study analyzed total of 119 articles that fit the criteria for inclusion by using a random sampling method that provided "inter-reliability for coding that identified discrepancies that were resolved by consensus" (Niccols et al., 2010, p. 3). An additional methodology that was important for this study is the recapture and capture method, which is similar to the pre/post method (Niccols et al., 2010, p. 3). This method ensured a "95% confidence interval, which suggested a 90% capture rate indicating that there was a sufficient number of studies that were used to prevent bias for the results of the meta-analysis" (Niccols et al., 2010, p. 3).

Another impressive research methodology analyzed integrated substance abuse treatment program effectiveness for mothers with an addiction (Niccols et al., 2010). This methodology allowed the researcher to develop a system for coding data. This method of coding allowed the researcher to gather "119 studies that contained 12 randomized trials that included five studies next comparing each study to integrated and nonintegrated treatment programs" to analyze treatment effectiveness (Niccols et al., 2010, p. 4). The researcher for this study also gathered "25 quantitative quasi-experimental studies that compared nonintegrated to integrated programs that assessed mental health outcomes that was used for data that will aid in the meta-analysis coding procedure" to conduct statistical analyses (Niccols et al., 2010, p. 4). This study also

offered statistical analyses that identified improvement rates in mental health scores from women who were involved in an integrated substance abuse treatment program, as opposed to a nonintegrated program. This finding was significant based on a "statistical value that was <.001 and confidence level of 95%, and no statistically significant heterogeneity among the studies" found (Niccols et al., 2010, p. 6).

An additional methodology useful for quantitative practices is to simultaneously analyze alternative and casual processes that account for limitations and assumptions (D'Onofrio, 2009). A recent study stressed the necessity of more quasi-experimental research that investigates addiction and alcohol consumption by the pregnant addict. An analysis was conducted to help identify the prevalence rates of alcohol or illicit drug use in pregnant women. This analysis included "multiple offspring per family to detect any genetic factors that are passed down from mothers and fathers to account for statistical associations" and can possibly identify why there is a consistency of pregnant women who are addicted to alcohol or illicit drugs (D'Onofrio, 2009, p. 1).

With the use of current quantitative methods, others can duplicate study results by developing strategies for a population of pregnant addicts and for the fetus that has been exposed to illicit drugs or alcohol through maternal consumption. Identifying barriers through a quantitative statistical analysis may foster behavioral changes in pregnant addicts undergoing addiction treatment by ensuring the treatment aligns with their needs (Jackson & Shannon, 2012).

Addiction research has investigated treatment options for pregnant women who are addicted to either illicit drugs or alcohol. Findings have proven that effective coping strategies for an addiction differ for women and men (Nelson et al., 2014, p. 45). Nelson et al. (2014) note that, "Implications for social work and addiction treatment" for substance abusing women appear to be most beneficial when treatment providers consider that access to care and the successful completion of addiction treatment for women addicts can be denied or unsuccessful due to their race, age, or educational background (p. 45). Age, race, and educational background for pregnant addicts are beneficial variables used to develop a horizontal approach to addiction treatment. This approach has been proven to assist with effective addiction treatment strategies across multiple risk factors that cause prolonged addiction for the pregnant addict and developmental deficits for the exposed child (Tomlinson et al., 2014, p. 277). Traditional addiction treatment programs did not meet needs of women; characteristics such as the age, race, and educational background are valued characteristics for an alternative addiction treatment model. These characteristics can be useful for treatment providers when helping pregnant addicts to overcome their addiction (Tomlinson et al., 2014). Table 1 provides a summary of studies related to topic and methodology for this study.

Table 1

Summary of Studies Related to Topic and Methodology

Author	Purpose of Study	Method	Results	Future Research Suggestions
D'Onofrio (2009)	Investigates addiction and alcohol consumption practiced by the pregnant addict to help identify prevalence rates of alcohol or illicit	Quantitative	Researchers have found that the use of quantitative approaches is able to identify "simultaneously casual process" that account for, for example, prolonged addiction practices, practiced by pregnant addicts (D'Onofrio, 2009, p. 1278).	More quasi-experimental designs are needed using secondary data to "project frequent use and its effectiveness of assessments for alcohol use by pregnant addicts" (D'Onofrio, 2009, p. 1278).

Author	Purpose of Study	Method	Results	Future Research Suggestions
	drug use in pregnant women.			
Jackson & Shannon (2012)	Identify outcomes and barriers for women who enter addiction treatment during pregnancy.	Qualitative and Quantitative	Qualitative data analysis identified barriers for all age groups as it relates to pregnant women being involved in addiction treatment, and that the qualitative "themes" for this research were "not mutually exclusive" and the women responses were derived from "several themes while responding to one question" (Jackson & Shannon, 2012, p. 1765). Quantitative data provided results through a logistic regression analysis that identified barriers such as age, accessibility, education and affordability to addiction treatment were found to be significant in hindering addiction treatment (Jackson & Shannon, 2012).	More research is needed that will investigate the barriers that influences addiction treatment among "rural pregnant women" in addition to making sure that addiction treatment settings are addressing the "unique, personal, social and economic" needs of pregnant addicts (Jackson & Shannon, p. 1768, 2012).
Nelson-Zlupko, Kauffman, & Dore (2014)	Identify gender differences between men and women who have an addiction as well as identify treatment needs, similarities and differences of chemically diagnosed women and men (Nelson et al., 2014).	Quantitative	Through research an alternative addiction treatment model was designed to manage oppression and gender-based similarities that heightens psychological and psychological variables that influences addiction practices/ behaviors practiced by women (Nelson et al., 2014).	More research is needed to address gender differences as it relates to addiction and addiction treatment. More research is need to address and support social work intervention strategies that will be most beneficial in effectively providing addiction resources and services for women which are different from men addicts (Nelson et al., 2014).
Niccols et al. (2010)	To investigate the strength of integrated addiction treatment programs, have on maternal health.	Quantitative	Results concluded that there is an advantage for pregnant addicts or women who have given birth to exposed children involved in integrated addiction programs that offer addiction treatment from a holistic approach that involves medical and mental addiction treatment as opposed to non-integrated addiction treatment (Niccols et al., 2010).	Future research suggest that a meta-analysis is most needed to support additional research findings that will identify the need for research that will measure the effectiveness of integrated addiction treatment programs for pregnant women (Niccols et al., 2010).
Tomlinson et al.(2014)	To investigate South African pregnant women who have epidemics of HIV, alcohol abuse, poor nutrition and depression in order to measure the effectiveness of prevention	Quantitative	Research concluded that South African children that are born from moms that have an addiction to alcohol, diagnosed with HIV or faced with a mental health deficit such as depression can benefit from an integrated treatment approach that will be able to effectively treat addiction and other related mental and medical	This study suggests that there is a continuous need for research that will continue to analyze influential variables such as age, poverty, race and access to care in order to assess and provide medical/ mental health treatment to effectively intervene at the onset of treatment (Tomlinson et al., 2014).

Author	Purpose of Study	Method	Results	Future Research Suggestions
	addiction treatment that will adequately provide positive addiction treatment to effectively sustain life		complications (Tomlinson et al., 2014).	

Summary

A relationship may exist between addiction, pregnancy, treatment, race, age, and referrals for treatment for pregnant addicts in the U.S. Census regions. This literature review provided information about the importance of analyzing treatment referrals in order to improve addiction treatment for the pregnant addict. Chapter three further describes the research design and methodology that was used for this study.

Chapter 3: Research Method

Introduction

The purpose of this cross-sectional quantitative research study was to assess the relationship between the source of treatment program referrals and the types of services and treatment settings utilized by pregnant addicts in the United States. The study focused on pregnant women with an illicit drug or alcohol addiction who entered treatment in 2012. In addition, I sought to determine if U.S. Census region and race data predicted the type of addiction service or treatment setting that pregnant addicts would obtain. The research questions and hypotheses for this study were:

RQ1: For pregnant women with an alcohol addiction in the year 2012, was there an association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment?

$H_0$1: For pregnant women with an alcohol addiction in the year 2012, there was no association between the source of treatment program referral and he type of service or treatment setting at the time of admission for addiction treatment.

$H_1$1: For pregnant women with an alcohol addiction in the year 2012, there was an association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment.

RQ2: For pregnant women with an illicit drug addiction in the year 2012, was there an association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment?

$H_0$2: For pregnant women with an illicit drug addiction in the year 2012, there was no association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment.

$H_1$2: For pregnant women with an illicit drug addiction in the year 2012, there was an association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment.

RQ3: For pregnant addicts with an alcohol addiction in the year 2012, did U.S. Census region and race data predict the type of addiction service or treatment setting for pregnant addicts?

H_0 3 For pregnant addicts with an alcohol addiction in the year 2012, the U.S. Census region and race data did not predict the type of addiction service or treatment setting for pregnant addicts.

$H_1$3: For pregnant addicts with an alcohol addiction in the year 2012, the U.S. Census region and race data did predict the type of addiction service or treatment setting for pregnant addicts.

RQ4: For pregnant addicts with an illicit drug addiction in the year 2012, did U.S. Census region and race data predict the type of addiction service or treatment setting for pregnant addicts?

H_0 4 For pregnant addicts with an illicit drug addiction in the year 2012, U.S. Census region and race data did not predict the type of addiction service or treatment setting for pregnant addicts.

$H_1$4: For pregnant addicts with an illicit drug addiction in the year 2012, U.S. census region and race data did predict the type of addiction service or treatment setting for pregnant addicts.

In this chapter, I explain the research design and methods that were used to gather and analyze the data retrieved from the 2012 TEDS-A and archived by SAMHA. I also provide information about the study population, data collection and analysis procedures, threats to validity, and ethical procedures.

Research Design and Rationale

For this retrospective research study, I used a cross-sectional quantitative design, as opposed to a qualitative design, because archival data obtained from the TEDS-A 2012 dataset is numerical. As such, archival data for this study was analyzed statistically to test whether there is a relationship between the source of treatment referrals and the type of service or treatment settings used by pregnant women with an illicit drug or alcohol addiction in the United States. My rationale for using a cross-sectional quantitative design was that this research analyzed archival data from 2012 that specifically related to illicit drug or alcohol addiction in pregnant women. The use of a quantitaive design was benefical in identifying an association among variables while analyzing large amounts of archival numerical data. The independent variable for

this study was the type of treatment program referral, and the dependent variable was the service or treatment setting at time of admission. There were no time or resource constraints.

Methodology

Population

Participants for this study included pregnant women in the United States with an alcohol or illicit drug addiction; the data was drawn from the 2012 TEDS-A archive. There were a total of 1,749,767 valid cases that contained supplemental data and data from several states, of which a percentage included pregnant addicts (SAMHSA, 2012).

Sampling and Sampling Procedures

For this study, I used archival data from the 2012 TEDS-A database and a simple stratified random sampling approach. The rationale for using this approach was that there are a large number of cases in the database, and I had to select cases that only included pregnant women with an alcohol or illicit drug addiction. With this sampling method, I could select data from pregnant addicts that closely related to this study's purpose. Data from participants who were not pregnant were excluded. Cases were selected from the 2012 TEDS-A dataset by using the select command feature in SPSS. The database allows for information to be downloaded from its website in SPSS format. G*Power version 3.1 was used to calculate sample size. Using an effect size of 0.3, α of .05, and power of 0.80, a G*Power analysis showed that a sample size of 475 was needed for this study. An effect size of 0.3 was used to measure the strength of the relationship between the independent and dependent variables.

Data Collection

SAMHSA (2012) collected the original dataset for this study, which is freely accessible by following strict user responsibility rules that direct users to use data solely for the statistical analysis and reporting of aggregated information, as opposed to reporting information that identifies participants and state organizations (SAMHSA, 2012). The data that I used for this study is publicly available on the SAMHSA (2012) website. No additional permission to gain access to the data was necessary.

I downloaded the data in a format that was compatible with SPSS. The information in this addiction database reflects a "comparison of each state compared to all other states to examine characteristics of one treatment setting in one state compared to the rest of the nation" (SAMHSA, 2012, p. 9). This database includes data from the National Outcomes Measures (NOMS), which is collected at the time of treatment admission and allowed state facilities and staff to collect and submit data to ensure their role as the "only national client level database on the subject for substance abuse treatment" (SAMHSA, 2010, p. 1).

Operationalization of Variables

The variables that I analyzed for this research study are listed in Table 2, which identifies what variable was used to answer each research question, the type of variable, and coding. The TEDS-A treatment program referrals described the person or agency making a referral for a client to become involved in either an alcohol or drug abuse treatment program (SAMHSA, 2010). The principal sources of referrals described by TEDS-A are "individuals, or self-referrals, alcohol or drug providers, health care providers, educational or employer EAP, community or

court officials" (SAMHSA, 2010, pp. B-17). The TEDS-A 2010 dataset manual describes the "type service and treatment setting" in which individuals are placed at the time of admission (SAMHSA, 2010, pp. B-40).

Table 2

Operationalization of Variables

Variable Name	Variable Type and Codes	Research Question
Treatment Program Referral	Nominal, categorical 1-Individual, 2-Alcohol/drug abuse care provider, 3-Other health care provider, 4-School (educational), 5-Employer (EAP), 6-Other community referral, 7-Court/criminal justice referral/DUI/DWI, 8-Missing data, 9-	RQ-1, RQ-2, RQ-3, RQ-4
U.S. Census Region	0-U.S. Territories, 1-Northeast, 2-Midwest, 3-South, 4-West,	
Race	1-Alaskan native (Aleut, Eskimo, Indian), 2-American Indian (other than Alaska Native), 3-Asian or Pacific Islander, 4-Black or African American, 5-White, 6-Asian, 7-Other Single Race, 8-Two or more races, 9-Native Hawaiian or other Pacific Islander, 10-Missing data	
Service Treatment Settings	Nominal, categorical 1-Detox, 24 hr. hospital inpatient; 2-Detox, 24 hr., free-standing residential; 3-Rehab/res, hospital (non-detox); 4-Rehab/res, short-term (30 days or fewer); 5-Rehab/res, long-term (more than 30 days); 6-Ambulatory, intensive outpatient; 7-Ambulatory, non-intensive outpatient; 8-Ambulatory detoxification	RQ-1, RQ-2

Data Analysis Plan

Descriptive Statistics

Descriptive statistics were used to present demographics and general information about pregnant addicts in the United States in an effort to identify any patterns related to selected variables. Descriptive statistics included frequencies, percentages, means, medians, mode, and range for age and race in the U.S. Census region data, type of addiction, source of treatment program referral, and service/treatment setting.

Interferential Statistics

I used the Chi square (χ^2) test of independence to analyze the data because of its ability to identify whether there is a significant relationship between two variables (Field, 2013). The Chi square of independence assumptions are met due to independence of data variables being "mutually exclusive" and the values of the cells being valued at 5 or more with no cell valued less than one (McHugh, 2013, p.143). For RQ1, I conducted the Chi square (χ^2) test of independence by using an 8 X 8 contingency table (df=49). The variables, type of treatment program referral, and service or treatment setting were analyzed for pregnant women with an alcohol addiction. In order to answer RQ2, the Chi square (χ^2) test of independence was conducted by using an 8 X 8 contingency table (df=49). The variables, source of treatment program referral, and service/treatment setting were analyzed for pregnant women with an illicit drug addiction.

For both RQ1 and RQ2, the level of significance (α) was set at .05 to test for statistical significance with the confidence levels being set at 95%. These parameters were chosen so that there would only be a 5% chance of a Type I error occurring. If the statistical analysis produced a $p \leq .05$, the null hypothesis was rejected. A calculation of the conditional and marginal probabilities was provided if there was an established association among variables showing that the *p*-value was statistically significant. If a statistically significant association was identified between variables, then I analyzed the probabilities within the contingency table. In addition, if there was a statistically significant association, I performed a Cramer's V (φ_c) test to determine the strength of association between the variables; the lower limit of the test value was 0 and the

upper limit was 1. The higher the test value in the range of 0 to 1, the stronger the association between variables. The following effect sizes were used to determine the strength of the association between the variables under examination: small 0.1, medium 0.3, and large 0.5 (Fort Collins Science Center, 2015).

I used a multinomial regression analysis to analyze variables that provided the outcome variable for the pregnant addict's addiction practices. It was also used to identify the defined predictor variables that influence pregnant addicts' continuous addiction practices/behaviors (Field, 2013). Multinomial analysis regression was used to analyze RQ3 and RQ4 and predict variables for drug or alcohol addiction practices for pregnant addicts. I performed a quantitative analysis to answer RQ3 and RQ4 from the use of a multinomial regression model. A multinomial regression model also allowed for the probability of an event occurring, "such as addiction for an individual or a population of pregnant addicts," which was most beneficial in providing results for addiction treatment for pregnant addicts (Field, 2013, p. 763). For RQ3 and RQ4, the probability that Y occurred for the "ith" person (pregnant addict) was identified as P, and Y was identified as the predictor or probability variables for alcohol or illicit drug addiction (Field, 2013, p. 763).

I analyzed data using SPSS version 21 software. SAMHSA previously processed, corrected, and cleaned the data in order to ensure its accuracy by using "quality control procedures" (SAMHSA, 2010, p. 22). I used additional precautionary measures for data cleaning by using the SPSS version 21 software to detect and correct inaccurate coding that would interfere with accurate research findings.

Threats to Validity

Extrinsic and intrinsic factors can influence validity before research takes place, and "intrinsic factors […] might influence research results during" the actual research process (Nachmias & Nachmias, 2008, p. 95). Extrinsic factors such as "ethical considerations and practicality of random selection" may prevent internal validity as well as "intrinsic factors such as history, maturation, experimental mortality, instrumentation, testing, and interactions with selection" (Nachmias & Nachmias, 2008, pp. 95-97). Since this current study used only archival data, threats to internal and external validity were not applicable. State facilities submitted the original data to SAMHSA but it is unknown how the data was collected at the state facilities. However, several threats to statistical conclusion validity had to be examined because of the use of archival data.

Threats to statistical conclusion validity occurred from the use of the SPSS software and archival data that could influence Type I and Type II error rates (Field, 2013). For example, one violation for a statistical test assumption could increase the chances of falsely concluding that there was a true relationship between variables (Type I error; Field, 2013). The Type II error violation for a statistical test is when the researcher accepts the null hypothesis that is deemed false to true. The Type II error can easily happen when the researcher believes that there is a statistical association existing between the independent and dependent variables when there is not (Field, 2013).

Another threat to statistical conclusion validity was that variables were coded into various datasets in order to provide accurate reporting of the data into the TEDS-A electronic file

(SAMHSA, 2011). As mentioned in chapter one, the Drug and Alcohol Services Information System (DASIS) for reporting data from state treatment facilities consists of three components that tie into three separate instruments: TEDS, I-SATS, and N-SSATS (SAMHSA, 2010). In order to minimize threats to statistical conclusion validity, the level of significance (α) was set to 0.5 and statistical power was set to .95.

Ethical Procedures

The Interuniversity Consortium for Political and Social Research (ICPSR) and the Center for Behavioral Health Statistics and Quality (CBHSQ) took measures to protect and ensure the participants' confidentiality and anonymity at the time of their initial data collection (SAMHSA, 2011). Aggregate data analysis was performed to prevent any identifying information from being revealed. The use of archival data was for statistical analysis and research reporting purposes only and was not used to identify participants or state organizations in any way. The data was secured while being used for analysis by storing it in separate files on a computer hard drive. All data was password protected, interpreted, and accessed solely by myself. Data was not collected or analyzed until this study received Institutional Review Board approval (#05-12-16-0138085) from Walden University. I will destroy data after a period of 5 years by deleting the information from my computer's hard drive.

Summary

This retrospective study used a quantitative cross-sectional design to determine the relationship between treatment referral source and types of addiction treatment/setting for pregnant addicts in the United States. This study relied on quantitative SPSS analyses in order to

present and interpret the research findings (Creswell, 2009). Chi square (χ^2) tests of independence were conducted to test for statistical significance. Cramer's *V* test, e_c, was done to measure the strength of association. A multinomial regression analysis was conducted to identify the relationship between the dependent and independent variables that were categorical in nature in order to identify particular variables that were useful in estimating the probabilities of pregnant addicts' addiction practices. Chapter 4 will provide the results of this data analysis.

Chapter 4: Results

Introduction

The purpose of this study was to assess the relationship between the source of treatment program referrals and the type of service or treatment settings available to pregnant addicts in the United States. I examined pregnant women with an illicit drug or alcohol addiction who were admitted for addiction treatment in 2012. In addition, I also investigated whether U.S. census region and race data predicted the type of addiction service or treatment setting utilized by pregnant addicts. The research questions and hypotheses for this study were:

RQ1: For pregnant women with an alcohol addiction in the year 2012, was there an association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment?

$H_0$1: For pregnant women with an alcohol addiction in the year 2012, there was no association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment.

$H_1$1: For pregnant women with an alcohol addiction in the year 2012, there was an association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment.

RQ2: For pregnant women with an illicit drug addiction in the year 2012, was there an association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment?

$H_0$2: For pregnant women with an illicit drug addiction in the year 2012, there was no association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment.

$H_1$2: For pregnant women with an illicit drug addiction in the year 2012, there was an association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment.

RQ3: For pregnant addicts with an alcohol addiction in the year 2012, did U.S. Census region and race data predict the type of addiction service or treatment setting for pregnant addicts at the time of admission for addiction treatment?

H_0 3 For pregnant addicts with an alcohol addiction in the year 2012, the U.S. Census region and race data did not predict the type of addiction service or treatment setting for pregnant addicts at the time of admission for addiction treatment.

$H_1$3: For pregnant addicts with an alcohol addiction in the year 2012, the U.S. Census region and race data did predict the type of addiction service or treatment setting for pregnant addicts at the time of admission for addiction treatment.

RQ4: For pregnant addicts with an illicit drug addiction in the year 2012, did U.S. Census region and race data predict the type of addiction service or treatment setting for pregnant addicts at the time of admission for addiction treatment?

H_0 4 For pregnant addicts with an illicit drug addiction in the year 2012, U.S. Census region and race data did not predict the type of addiction service or treatment setting for pregnant addicts at the time of admission for addiction treatment.

$H_1$4: For pregnant addicts with an illicit drug addiction in the year 2012, U.S. Census region and race data did predict the type of addiction service or treatment setting for pregnant addicts at the time of admission for addiction treatment.

In Chapter 4, I provide the results from the Chi square (χ^2) tests of independence that I used to test for statistical significance, and the Cramer's *V* test, ϕ_c that I used to measure the strength of association for RQ1 and RQ2. In addition, with the aid of SPSS, I computed a multinomial regression analysis to provide the results for RQ3 and RQ4 that identify the probability outcomes for pregnant addicts.

Data Collection

Data collection for this study was computer assisted and downloaded by SPSS from the Substance Abuse and Mental Health Services Administration (SAMSHA) database. The TEDS-A, 2012 ICPSR35037 is composed of secondary admission data from 2012, derived from substance abuse treatment facilities in the United States. I took extra processing steps with the aid of SPSS for data collection purposes to conduct consistency checks for all variables. I tested to ensure measures against data corruption, kept a secured log of all variables being tested by the Chi square test of independence (RQ1 and RQ2) and multinomial regression analysis for RQ3 and RQ4, and securely stored each variable on a computerized file that was previously labeled for research purposes.

The population of pregnant addicts and their demographic information was important in order to assess any possible relationship between the sources of addiction treatment, and to determine whether U.S. Census regions and race predicted the type of addiction service or

treatment that pregnant addicts utilized. Identifying a possible or consistent variable relationship, and identifying predictor influential variables from this study's sample could lead to effective treatment outcomes through addiction treatment geared toward pregnant addicts.

This study's sample population is of interest to addiction researchers who want to make a clear distinction between pregnant addicts and pregnant women as a whole based on the desire to provide and develop early intervention addiction services to prevent or eliminate addiction practices (NIDA, 2012). This study's population of pregnant addicts was defined on the TEDS-A as individuals "who ha[d] been admitted for treatment of [their] own drug or alcohol problem," as opposed to being admitted based on another clinical perspective that lead to drug or alcohol abuse (SAMHSA, 2010, p.7).

Results

I analyzed data using SPSS version 21. The results for the analysis of each research question are below.

Research Question 1

In 2012, was there an association between the source of treatment program referral and the type of service or treatment setting for pregnant women with an alcohol addiction?

$H_0$1: For pregnant women with an alcohol addiction in the year 2012, there was no association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment.

$H_1$1: For pregnant women with an alcohol addiction in the year 2012, there was an association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment.

Alcohol only. Data consisted of *n*=1,385 pregnant women who were diagnosed as having an addiction to alcohol but no other drugs.

Table 3

RQ 1 Number of Pregnant Addicts Who Have an Alcohol Addiction

	Service/Treatment Setting						
Program Source	Detox, Inpatient	Detox, Residential	Rehab Short	Rehab Long	Ambulatory Int. Out.	Ambulatory Out.	Ambulatory Detox
Individual	0	35	26	27	50	198	2
Alcohol/ Drug Abuse Care Provider	0	2	16	22	15	32	0
Other Health Care Provider	2	6	10	4	11	38	2
School	0	0	0	0	0	23	0
Employer	0	0	0	0	0	1	0
Other Community Referral	1	9	7	17	52	132	9
Course/ Criminal Justice	0	17	19	29	98	476	6

Statistical analysis consisted of a Chi square test of independence which showed that there is a relationship between the source of treatment program referral and type of service or treatment setting for pregnant women, $\chi^2(36)$, $p < .001$, but the relationship was weak in strength (Cramer's V = .155; Table 4).

Table 4

RQ 1 Chi Square Analysis- Alcohol Addiction

	df	Chi square	*p*-value
Pregnant with Alcohol Addiction	36	616.31	0.000

Effect Size Analysis Results

Test	Value
Cramer's V	0.155

Alcohol + other drugs. This selection of data consisted of *n*=6,730 pregnant women who were diagnosed with an addiction to alcohol combined with other drugs (Table 5).

Table 5

RQ1, Number of Pregnant Addicts Who Have an Alcohol and Drug Addiction

	Service/Treatment Setting							
Program Source	Detox Inp	Detox Res	Detox Hosp	Rehab Short	Rehab Long	Ambulatory Int. Out.	Ambulatory Out.	Ambulatory Detox
Individual	56	136	1	166	221	275	863	5
Alcohol/ Drug Abuse Care Provider	2	18	1	100	162	79	200	0
Other Health Care Provider	4	19	1	86	36	68	262	6
School	0	0	0	0	2	1	73	0
Employer	0	0	0	0	0	3	4	0
Other Community Referral	3	20	3	89	189	305	847	0
Course/ Criminal Justice	1	44	0	126	241	434	1,619	10

Statistical analysis consisted of a Chi square test of independence which showed that there is a relationship between the source of treatment program referral and the type of service or treatment setting for pregnant women, $\chi^2(42) = 634.08$, $p < .001$, but the relationship was weak in strength (Cramer's V =.125) (Table 6).

Table 6

RQ 1 Chi Square Analysis- Alcohol and Drug Addiction

	df	Chi Square	*p*-value
Pregnant with Alcohol + Substances	42	634.08	0.000

Effect Size Analysis Results

Test	Value
Cramer's V	0.125

Research Question 2

In 2012, was there an association between the source of treatment program referral, the type of service and treatment setting for pregnant women with a drug addiction?

$H_0$2: For pregnant women with an illicit drug addiction in the year 2012, there was no association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment.

$H_1$2: For pregnant women with an illicit drug addiction in the year 2012, there was an association between the source of treatment program referral and the type of service or treatment setting at the time of admission for addiction treatment.

Drug addiction only. This selection of data consisted of *n*=14,618 women who were concurrently pregnant and diagnosed with addiction to drugs but not alcohol (Table 7).

Table 7

RQ2, Number of Pregnant Addicts Who have a Drug Addiction

	Service/ Treatment Setting							
Program Source	Detox, Inpatient	Detox, Residence	Detox, Hospital	Rehab Short	Rehab Long	Ambulatory. Int. Out.	Ambulatory. Out.	Ambulatory. Detox
Individual	16	406	7	420	644	612	3224	46
Alcohol/ Drug Abuse Care Provider	2	65	7	220	294	223	563	1
Other Health Care Provider	14	65	6	177	134	173	789	7
School	0	0	0	0	2	2	54	0
Employer	0	0	0	1	0	2	6	0
Other Community Referral	7	54	14	236	427	537	1672	2
Course/ Criminal Justice	4	104	4	275	668	551	1878	3

Chi square analysis showed that there is a relationship between the source of treatment program referral and type of service or treatment setting for pregnant women, $\chi^2(42) = 694.53$, $p < .001$, but that it was weak in strength (Cramer's V =.089) (Table 8).

Table 8

RQ 2 Chi Square Analysis – Drug Addiction

	df	Chi square	*p*-value
Pregnant with Drug Addiction	42	694.53	0.000

Effect Size Analysis Results

Test	Value
Cramer's V	0.089

Drugs + alcohol. This selection of data consisted of *n*=19,963 women who were concurrently pregnant and diagnosed as having an addiction to drugs combined with alcohol (Table 9).

Table 9

RQ2,Number of Pregnant Addicts diagnosied with an Addiction to Alcohol and Drugs.

	Service/Treatment Setting							
Program Source	Detox, Inp	Detox, Res	Detox, Hosp	Rehab Short	Rehab Long	Amb. Int. Out.	Amb. Out.	Amb. Detox
Individual	21	507	8	560	838	837	3889	49
Alcohol/Drug Abuse Care Provider	4	81	8	304	434	287	731	1
Other Health Care Provider	16	78	7	253	166	230	1013	11
School	0	0	0	0	4	3	104	0
Employer	0	0	0	1	0	5	9	0
Other Community Referral	9	65	17	318	599	790	2387	2
Course/Criminal Justice	5	131	4	382	880	887	3021	7

Chi square analysis showed there is a relationship between the source of treatment program referral and service/treatment setting for pregnant women, $\chi^2(42) = 1{,}002.182$, $p < .001$, but was weak in strength (Cramer's V = .092) (Table 10).

Table 10

RQ 2 Chi Square Analysis –Alcohol and Drug Addiction

	df	Chi square	*p*-value
Pregnant with Alcohol and Drug Addiction	42	634.08	0.000

Effect Size Analysis Results

Test	Value
Cramer's V	0.125

Research Question Three

In 2012, did race and U.S. census region data predict the type of service/ treatment setting received for pregnant women with alcohol addiction?

H_0 3: For pregnant addicts with an alcohol addiction in the year 2012, the U.S. Census region and race data did not predict the type of addiction service/treatment setting for pregnant addicts at the time of admission for addiction treatment.

$H_1$3: For pregnant addicts with an alcohol addiction in the year 2012, the U.S. Census region and race data did predict the type of addiction service/treatment setting for pregnant addicts at the time of admission for addiction treatment.

Alcohol only. This selection of data consisted of *n*=1,388 women who were concurrently pregnant and diagnosed with an addiction to alcohol but no other drugs. After listwise deletion, no women received treatment in a rehab/hospital setting. The multinomial regression results below do not make assumptions about the scales of the predictors (Table 11).

Table 11

Multinomial Regression Results: Odds Ratios

		Predictors						
		U.S. Census Region			Race			
Service Setting	**Intercept**	**Midwest**	**South**	**West**	**American Indian**	**Black**	**Other Single Race**	**Two or More Races**
Amb Intensive Outpatient	.089***	.639	1.308	.793	1.511	1.138	.304	2.027
Detox 24 Hour Inpatient	.098***	.929	1.071	.825	1.955	1.568	1.966*	1.694
Detox 24 Hour Residential	.068***	1.730	1.680	.369*	3.597**	2.002*	.733	1.439
Rehab Hospital Inpatient	.100***	4.907***	2.111*	1.448	1.853*	1.325	1.102	1.373

Note. Reference group includes White northeasterners in long-term rehab.
* p <.05. ** p <.01. *** p <.001.

Research Question 4

In 2012, did race and U.S. census regions data predict the type of service or treatment setting received for pregnant women with a drug addiction?

H_0 4 For pregnant addicts with an illicit drug addiction in the year 2012, U.S. Census region and race data did not predict the type of addiction service or treatment setting for pregnant addicts at the time of admission for addiction treatment.

$H_1$4: For pregnant addicts with an illicit drug addiction in the year 2012, U.S. Census region and race data did predict the type of addiction service or treatment setting for pregnant addicts at the time of admission for addiction treatment.

Drug addiction only (no alcohol). This selection of data consisted of *n*=14,711 women who were concurrently pregnant and diagnosed with an addiction to drugs but not alcohol (Table 12).

Table 12

Multinomial Regression Results: Odds Ratios

		Predictors						
		US Census Region			Race			
Service Setting	Intercept	Midwest	South	West	American Indian	Black	Other Single Race	Two or More Races
Amb Intensive Outpatient	.078***	1.472**	1.519***	.792	.855	.702**	.738	1.408
Detox 24 Hour Inpatient	.184***	1.194*	1.133	1.715***	1.673***	1.326***	1.478***	2.013***
Detox 24 Hour Residential	.104***	2.957***	2.062***	.621***	1.496*	1.121	.805	1.564*
Rehab Hospital Inpatient	.144***	2.820***	1.896***	1.162	1.785***	1.515***	1.176	1.331

Note. Reference group includes white northeasterners in long-term rehab.
* p <.05. ** p <.01. *** p <.001.

Drug addiction with alcohol. This selection of data consisted of *n*=20,098 women who were concurrently pregnant and diagnosed with an addiction to drugs and alcohol (Table 13).

Table 13

Multinomial Regression Results: Odds Ratios

		Predictors						
		US Census Region			Race			
Service Setting	**Intercept**	**Midwest**	**South**	**West**	**American Indian**	**Black**	**Other Single Race**	**Two or More Races**
Amb Intensive Outpatient	.070***	1.334**	1.668***	.787*	.839	.751**	.716*	1.620*
Detox 24 Hour Inpatient	.185***	1.150*	1.193**	1.540***	2.167***	1.365***	1.459***	2.050***
Detox 24 Hour Residential	.111***	2.686***	1.955***	.537***	1.869***	1.123	.780	1.290
Rehab Hospital Inpatient	.152***	2.810***	1.827***	1.269***	1.864***	1.390***	1.106	1.206

Note. Reference group includes white northeasterners in long-term rehab.
* p <.05. ** p <.01. *** p <.001.

Summary

Data for this study were analyzed using SPSS and two quantitative methods the Chi square test of independence and multinomial regression. Results from the Chi square test of independence analysis for RQ1 results revealed that there is a significant relationship between the source of treatment program referral and service/treatment setting for pregnant women who were diagnosed with only an alcohol addiction. Although there was a relationship among the variables, the strength of this relationship was determined to be weak due to the computed analysis derived from the Cramer's V analysis.

Results from the Chi square test of independence analysis for RQ2 revealed that there is a significant relationship between the source of treatment program referral and service/treatment

setting for pregnant women diagnosed with both an alcohol and illicit drug addiction. Even though there was a relationship among the variables, the strength of this relationship was determined to be weak due to the computed analysis derived from the Cramer's V analysis.

Results from the multinomial regression analysis for RQ3 supported the alternative hypothesis that the U.S. census region and race data did predict the type of addiction service/treatment setting for pregnant addicts diagnosed with an alcohol addiction at the time of treatment admission. Results from the multinomial regression analysis for RQ4 supported the alternative hypothesis that revealed that the U.S. census region and race data did predict the type of addiction service/treatment setting for pregnant addicts diagnosed with a drug addiction at the time of treatment admission.

Chapter 5 will reiterate the purpose and nature of the study, summarize key findings, provide an explanation of findings as they relate to the peer-reviewed literature described in chapter two, explain the limitations of the study, provide recommendations for future research, and describe implications for positive social change.

Chapter 5: Discussion, Conclusions, and Recommendations

Introduction

The purpose of this study was to assess drug and alcohol addiction in pregnant women and the setting in which they sought service or treatment to determine whether U.S. Census regions and race data could predict the type of addiction service or treatment that pregnant addicts chose. I conducted this study because pregnancy for addicts is a health concern, and pregnant addicts could benefit from ongoing research to help eliminate addiction through effective treatment. I analyzed the variables listed in Chapter 3 that have an impact on the addiction treatment choices made by pregnant addicts. The goal of the study was to identify possible relationships and predictor variables to redevelop effective addiction treatment strategies both globally and geographically for pregnant addicts.

The results of this study could be used to promote positive social change by providing information about addiction treatment services and resources for pregnant addicts. The results of RQ1 and RQ2 showed that there was an association between the variables tested (pregnant addicts diagnosed separately with alcohol addiction and pregnant addicts diagnosed with a drug addiction). The associations I found for RQ1 and RQ2 can be a useful tool for clinicians in assessing and providing pregnant addicts with the most effective addiction treatment service to meet their needs.

The results of RQ3 and RQ4 showed that the 2012 U.S. Census region and race data did indeed predict the type of addiction service or treatment setting used by pregnant addicts who were diagnosed with only a drug addiction, and pregnant addicts who were diagnosed with both

a drug and alcohol addiction at the time of treatment admission. These results may help researchers and providers understand the triangulation of addiction for pregnant addicts, the research variables that identify and support pregnant addicts' risky addiction behaviors, and the environmental and demographic factors that aid in poor addiction treatment outcomes**.**

Interpretation of Findings

The results of RQ1 and RQ2, outlined in Tables 3, 4, 5, and 6, show that the null hypotheses could be rejected for pregnant addicts diagnosed only with an alcohol addiction, and for pregnant addicts diagnosed with both an alcohol and drug addiction. The alternative hypothesis in this study was accepted based on the results listed in Table 3 for RQ1 (pregnant addicts diagnosed with alcohol addiction). These results indicated that there is a statistically significant relationship between the source of treatment program referral and type service or treatment setting: $\chi^2(36)$, $p < .001$. In addition, for pregnant addicts diagnosed with an alcohol addiction in combination with other drugs, the analysis in Table 4 shows a statistically significant relationship between the source of treatment program referral and service or treatment setting: $\chi^2(42) = 634.08$, $p < .001$.

The alternative hypothesis for RQ2 which stated that a possible relationship exists between the source of addiction treatment program referrals and the service or treatment settings used by pregnant women diagnosed with drug addiction only was accepted: $\chi^2(42) = 694.53$, $p < .001$ (see Table 5). In addition, the results for pregnant addicts diagnosed with an alcohol addiction combined with an addiction to other drugs revealed that there is a statistically

significant relationship between the source of treatment program referral and service/treatment setting: $\chi^2(42)=1{,}002.182$, $p < .001$(see Table 6).

Compared to this study's results and the current literature presented in Chapter 2, the alternate hypotheses presented in this study indicate that there is an association among the source of addiction treatment referral and addiction service or treatment setting for pregnant addicts that reside in the U.S. Census regions. Therefore, a prediction can be made that variables I analyzed in this study (source of addiction treatment referral and addiction service/treatment setting) can influence prolonged addiction practices by pregnant addicts while they are involved in or assessed for addiction treatment.

Researchers have demonstrated that addiction treatment is unequally distributed for women compared to men (Samuelsson, 2015). Gender insights are important in relation to how such a stigma may result in unequal distribution and access to effective addiction treatment solutions for pregnant addicts. The literature shows that at the time of admission or during the initial phase of addiction treatment, women's choices of addiction treatment appear to have an impact on their treatment outcomes. Factors that are not taken into consideration can possibly influence prolonged addiction, the diversity of addiction treatment program referral, and service or treatment programs that are not specifically geared toward women (Samuelsson, 2015).

This study's findings provide statistical results of the demographic analysis such as U.S Census regions and race data, the type of addiction, and the impact of service treatment settings and the referral process for pregnant addicts; they also show a definite relationship between these

elements. According to Lal, Deb, and Kedia (2015), women rated lower than men when assessed for admission for substance abuse treatment by a 3 to 1 ratio.

Recognizing the origin of treatment referrals and their association with placing addicted pregnant addicts in effective addiction services or treatment settings is paramount for positive addiction treatment outcomes. However, there may be limited barriers that affect positive addiction treatment outcomes due to limited addiction research, which generally does not address the factors that have a negative impact on addiction treatment, specifically for women.

The literature indicates that in order for clinicians to diminish negative treatment outcomes, preparation is the key to assessing pregnant addicts for addiction treatment (Ickovics, 2012). Jackson and Shannon (2012) concluded that treatment program referrals and addiction service or treatment centers geared specifically toward women who offer positive addiction resources for the pregnant addicts are more likely to produce positive health outcomes for the developing exposed fetus and the pregnant addict. The literature shows the importance of effective addiction treatment for women, but influential variables have not been analyzed up to this point. The inadequate understanding of addiction treatment for pregnant women can drive a population of women to become addicts during pregnancy (Ickovics, 2012).

The multinomial regression results listed in Table 7 for RQ3, and the results listed in Tables 8 and 9 for RQ4 show that both research questions' null hypotheses were rejected. Both alternative hypotheses support that a prediction can be made from variables such as race and U.S Census regions data to predict the type of service or treatment setting used by pregnant women in 2012 with an alcohol or drug addiction. My interpretation of the results of both RQ3 and RQ4

led me to predict that the variables in question can provide results for pregnant addicts who are more likely or less likely to be involved in the type addiction service or treatment setting of their choice. Clinical predictions can also be made as to what type of addiction service or treatment setting will be most conducive to meeting the addicts' needs based upon the predictor variables that mark the probability of the different possible outcomes. The results of RQ3, listed in Table 7, showed the results for women who have only an alcohol addiction: :

- Pregnant women with an alcohol addiction from the Midwest (*OR*=4.907, *p* <.001) and South (*OR*=2.111, *p* <.05) are *more likely* to be admitted for an inpatient hospital stay than for long-term rehab than Northeasterners.
- Pregnant women with an alcohol addiction from the West (*OR*=.369, *p* <.05) are *less likely* to undergo a 24-hour residential detox than women in the Northeast.
- American Indian (*OR*=3.597, *p* <.01) and black (*OR*=2.002, *p* <.05) pregnant women with an alcohol addiction are more likely to undergo a 24-hour residential detox than their white counterparts.
- Pacific Islander and Asian pregnant women with an alcohol addiction are more likely to be admitted for 24-hour detox (*OR* = 1.966, *p* <.05) than their white counterparts.

Tables 8 and 9 show the results for RQ4 in regard to pregnant addicts who have an addiction to drugs only, and pregnant addicts that have an addiction to drugs in combination with alcohol. The results in Table 8 for pregnant women who have a drug addiction only revealed that:

- Pregnant women from the Midwest with a drug addiction were *more likely* to receive all services other than long-term rehab than their Northeastern counterparts.
- Except for being admitted for 24 detox, pregnant women from the South were *more likely* than their Northeastern counterparts to receive all services other than long-term rehab.
- Compared to pregnant women with a drug addiction in the Northeast, women in the West were *more likely* to be admitted for a 24-hour detox (*OR*=1.715, *p* <.001) and *less likely* to undergo a 24-hour residential detox (*OR*=.621, *p* <.001).
- Compared to White women with a drug addiction, all other races were *more likely* to undergo a 24-hour hospital detox (all at *p* <.001).
- Compared to White women with a drug addiction, American Indian (*OR*=1.785, *p* <.001) and black (*OR*=1.515, *p* <.001) women were *more likely* to be admitted for hospital rehab.
- Compared to White women with a drug addiction, American Indian (*OR*=1.673,*p* <.001) women and women identifying with two or more races (*OR*=2.013, *p* <.001) were *more likely* to be undergo a 24-hour hospital detox.
- Compared to white women with a drug addiction, Black women (*OR*=.702, *p* <.01) were *less likely* to receive intensive care in the outpatient setting.

The results listed in Table 9 for pregnant addicts who have an addiction to both drugs and alcohol revealed that:

- Pregnant women from the Midwest and the South with a drug/alcohol addiction were *more likely* than their Northeastern counterparts to receive all services other than long term rehab.
- Compared to pregnant women with a drug/alcohol addiction in the Northeast, women in the West were *more likely* to be admitted for a 24-hour detox (*OR*=1.715, *p* <.001) and to receive rehab services at a hospital (*OR*=1.269, *p* <.001) but were *less likely* to undergo a 24-hour residential detox (*OR*=.537, *p* <.001) or receive intensive outpatient care (*OR*=.787, *p* <.05).
- Compared to White women with a drug/alcohol addiction, American Indian women were *more likely* to undergo a 24-hour hospital detox (*OR*=2.167, *p* <.001), undergo a 24-hour residential detox (*OR*=1.869, *p* <.001), and undergo hospital-based rehab (*OR*=1.864, *p* <.001).
- Compared to White women with a drug/alcohol addiction, Black women were *more likely* to undergo a 24-hour hospital detox (*OR*=1.365, *p* <.001) and hospital-based rehab (*OR*=1.390, *p* <.001), but less likely to receive intensive outpatient care (*OR*=.751, *p* <.01).
- Compared to White women with a drug/alcohol addiction, Pacific Islander and Asian women were *more likely* to undergo a 24-hour hospital detox, but less likely to receive intensive outpatient care (*OR*=.751, *p* <.01).

- Compared to White women with a drug/alcohol addiction, women identifying with two or more races were *more likely* to undergo a 24-hour hospital detox (*OR*=1.620, $p<.05$) and to undergo a 24-hour residential detox (*OR*=2.050, $p<.001$).

The two null hypotheses for RQ3 and RQ4 showed that demographic information is important for identifying the odds and ratios across regions and race for pregnant addicts' addiction practices and behaviors (Azar, 2012). Literature from Chapter 2 supports this research finding and the phenomenon that prolonged addictive behaviors exhibited by the pregnant addict developed from various pathophysiological influential variables. This study's results show race and U.S census regions data as key variables that can be used to develop addiction treatment strategies and services specifically for women (Maguire, 2014).

This study has revealed evidence that aligns with recent literature that suggests that these results can be used as best practices for addiction treatment to aid in addiction treatment for pregnant addicts that reside in various regions across the United States. This study's results, along with similar research findings, appear to be needed the most in U.S. Census regions where addiction practices and early pregnancy are more at risk to develop due the relationship between addiction practices, abuse, and unwanted pregnancy (Azar, 2012).

This study is consistent with the findings in the context of this study's theoretical framework that provides an explanation for pregnant addicts' addiction at the time of treatment from a holistic/theoretical perspective. The variables in question in RQ1 through RQ4 and this study's results can be used as part of addiction treatment resolution strategies that support a theoretical reasoning for addiction practices exhibited by pregnant women.

This study expanded on three theories related to addiction. In addition, the goal of this research was to show how self-efficacy, CBT, and REBT can be used in combination to educate women/pregnant addicts about addiction and to diminish addictions derived from high risk behaviors. Self-efficacy played a significant role in this study's theoretical framework, as it does in the literature on substance abuse treatment outcomes and risk reduction behaviors for pregnant women (Bandura, 1977; 1999) by showing how levels of self-motivation can lead a person to self-actualize or self-measure his/her capability to reduce addiction. The three theoretical models for this study—self-efficacy, CBT, and REBT—are in alignment with this study's findings. This study has identified a statistical association between the variables and strong predictor variables for prolonged or consistent addiction that have proven useful in providing addiction treatment and address behaviors for individuals and groups facing addiction.

Limitations of the Study

Because this study used archived data, the process of eliminating and altering data to ensure the confidentiality of participant responses may have produced bias and limited reliability for the research findings by attempting to eliminate violations of assumptions for the statistical test results computed by SPSS. The statistical analysis used for this study included the Chi square (χ^2) test of independence and the multinomial regression. Researchers previously extracted the data using three electronic systems, as opposed to this study in which the researcher only used SPSS for data extraction. The three systems that were originally used to extract data were The Drug and Alcohol Services Information System (DASIS), the Inventory of Substance Abuse Treatment Services (I-SATS), and the National Survey of Substance Abuse Treatment

Services (N-SSATS; SAMHSA, 2011). A limitation existed from previous data collection due to data derived from drug and alcohol treatment participants both at the time of admission and at the end of treatment services. Two endpoints that were used to gather data from participants as it relates to their addiction and treatment presented limitations concerning the ability to collect data throughout the course of treatment (SAMHSA, 2010). Further, participants were admitted through an "initial screening, referral process, and during the waitlist procedure" (SAMHSA, 2010, p. 5). The waitlist procedure is how participants are assessed and considered for treatment.

Limitations during the admission phase of addiction treatment also existed in the timing/collection of data due to public funding; reporting agencies received large amounts of public funds for participants characterized as less severe and who were admitted for addiction treatment more quickly than participants admitted to treatment facilities with less public funds (SAMHSA, 2011). The original study also reported limitations occurred in the "change of provider or type of services, concurrent enrollment into two modalities, and co-dependency criteria" (SAMHSA, 2010, pp. 5-7). Additionally, the process for eliminating and altering data in this study to ensure the confidentiality of participant responses may have produced limited reliability of the research findings by attempting to eliminate violations of assumptions for the statistical test used in this study, the Chi square (χ^2) test of independence, and multinomial regression (Field, 2013).

Recommendations for Future Research in Addiction Treatment

It is recommended that future research address chemical dependency for women who are prone to become addicts and pregnant addicts that are diagnosed with alcohol addiction, drug

addiction, or both. It is also recommended that women have special needs that need to be addressed before clinicians begin to provide addiction treatment. This study could also be replicated from a global and inner region investigation to complete a cross sectional comparison with and contrast of results to closely identify similarities and differences between the consistent and non-consistent causes of addiction**.**

It is recommended that the use of Aaron Beck's cognitive behavioral therapy in combination with Albert Bandura's theory of self- efficacy be simultaneously used by addiction clinicians at the time of admission for pregnant addicts to learn and understand the importance of how to self-actualize (Bandura self-efficacy) the pros and cons of being involved in addiction treatment. The use of both theories at the time of admission for addiction treatment could allow the clinician to assess the pregnant addict's ability and inability of completing successful addiction treatment. It is recommended that the additional use of rational emotive behavioral therapy developed by Albert Ellis become part of the addiction treatment process as well. Rational emotive behavioral therapy applied in addiction treatment by trained clinicians could allow the pregnant addict to become knowledgeable about their irrational thoughts/ beliefs that influence their addiction. This could result in rational practices/behaviors producing more positive addiction treatment outcomes Lastly, it is recommended that the use of rational emotive behavioral therapy be used by addiction clinicians as part of addiction treatment for pregnant addicts to reveal to pregnant addicts the process of developing rational alternatives to suppress and possibly end negative irrational thoughts that influence prolong addiction practices. Overall

it is recommended that all three theories be used to provide more effective addiction treatment for pregnant addicts that have an addiction to alcohol and/or illicit drugs.

Implications for Social Change

The implications of this research on social change on a population of women who are prone to become involved with illicit substances or alcohol during pregnancy include the need for effective addiction treatment. Effective addiction treatment could help addicts develop positive behaviors and improve human welfare for generations to come. This study's recommendation for future practice is to utilize these results to aid in addiction prevention programs and public health policy development for pregnant addicts to improve addiction treatment for women.

This study has provided scientific results that can aid in gaining a new perspective on treating pregnant addicts, and influence society's and clinicians' attitudes related to providing addiction treatment for women. From a familial and individual perspective, addiction damages both the family system and the individual who continues to engage in addiction. Effective addiction treatment can save lives and educate families and addicts about the pros and cons of prolonged addiction. Further research on addiction is needed to promote social, individual, and organizational positive change and improve human and social welfare.

The results of this study support the validity of association between the source of treatment program referral and service/treatment setting at the time of addiction treatment admission. Identifying the odds that the U.S. census region and race data are predictor variables and the most accurate type of addiction service/treatment setting for pregnant addicts at the time

of admission is crucial. The results of RQ1 can allow addiction clinicians to utilize these variables as a tool both in the referral process and at the time of admission as an important determinant for the treatment of pregnant addicts.

The results of RQ2 can allow addiction clinicians to utilize these variables as a tool in the referral process of pregnant addicts at the time of addiction treatment. The results of RQ3 can allow addiction clinicians to utilize these variables as a tool in the referral process at the time of admission to identify predictor variables and measure the odds and ratio both geographically for pregnant addicts involved in or not involved in addiction treatment. The results of RQ4 can allow addiction clinicians to utilize these variables as a tool in the referral process at the time of admission to identify predictor variables and measure the odds and ratio geographically to treat addiction effectively for pregnant addicts involved in addiction treatment.

The results from the four research questions have implications for social change as a new approach for addiction clinicians to provide more effective addiction treatment specifically designed for pregnant women. This study's implications for theory, used as it relates to addiction and the pregnant addict's self-reasoning or justification for prolonged addiction practices, is to apply each theory as a part of treatment. The social implications for theories used in this study (Aaron Beck's cognitive behavioral therapy, Albert Bandura's theory of self- efficacy, and rational emotive behavioral therapy by Albert Ellis) are that these theories could aid in the pregnant addict's understanding of continued drug use and provide the pregnant addict with an underlining perspective as to why they continue to practice negative addiction behaviors.

Conclusion

Over the course of this investigation, demographic information, such as the information obtained from the U.S. census regions and race data, identified that that these variables are indeed predictor variables that can be used as indicators to identify the odds and ratio determinants for the addiction practices of pregnant women. This study has concluded that the standard way of admitting and assessing pregnant addicts for addiction treatment can include the source of treatment program referral and service/treatment settings. Such an assessment is essential for pregnant addicts' effective addiction treatment outcomes.

Pregnancy, addiction, and addiction treatment are important sociocultural factors that can lead to policy development for the implementation of effective addiction treatment strategies for pregnant addicts. Effective addiction treatment could help to promote social change for a growing population of pregnant addicts as well as diminish high mortality rates and addiction practices. One of the roles of public health providers is to help remove barriers that could lead to prolonged addiction for pregnant women. Women bear children, but also face life challenges such as poverty, domestic violence, social expectations, and physiological damages that can lead to addiction. Through addiction research, scientific results can be applied to reduce addiction from a global, regional, and gender problem.

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