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Barriers and Facilitators to Opioid Use Treatment and Recovery Services During Pregnancy

Loralie Woods
University of San Diego

UNIVERSITY OF SAN DIEGO

Hahn School of Nursing and Health Science

DOCTOR OF PHILOSOPHY IN NURSING

Barriers and Facilitators to Opioid Use Treatment and Recovery Services During Pregnancy

By

Loralie Woods

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Dissertation Committee

Cynthia D. Connelly, PhD, RN, FAAN Chairperson

Jane M. Georges, PhD, RN Member

Semira Semino-Asaro, PhD, RN Member

UNIVERSITY OF SAN DIEGO
Hahn School of Nursing and Health Science
DOCTOR OF PHILOSOPHY IN NURSING

CANDIDATE'S
NAME: LORALIE WOODS

TITLE OF
DISSERTATION: BARRIERS AND FACILITATORS TO OPIOID USE
                   TREATMENT AND RECOVERY SERVICES DURING
                   PREGNANCY

DISSERTATION
COMMITTEE:

_____
Cynthia D. Connelly, PhD, RN, FAAN
Chairperson

_____
Jane M. Georges, PhD, RN
Committee Member

_____
Semira Semino-Asaro, PhD, RN
Committee Member

Abstract

Purpose: To identify barriers and facilitators to opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids.

Background: Over 130 Americans die daily after overdosing on opioids. Women have not been immune from opioid use disorders (OUDs), with a 4-fold increase from 1999-2010. The prevalence of opioid use among pregnant women increased from 1.5 per 1,000 hospital deliveries to 6.5. Although the annual National Surveys on Drug Use and Health (NSDUH) has provided information on risk factors for OUD related to socioeconomic and demographic factors, no studies using this data have identified barriers to opioid use treatment among pregnant and nonpregnant women.

Specific aims: (1) describe demographic characteristics (age, race/ethnicity, education, marital status, health insurance, employment, income, geographic location, and treatment setting), clinical characteristics (health status, mental health status, and substance use), and opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids, (2) examine the relationships among demographic characteristics, clinical characteristics, perceived need for treatment, and facilitators/barriers to opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids, (3) identify factors associated with increased odds of opioid use treatment among pregnant women who misuse opioids.

Method: A cross-sectional correlational study using 2016 to 2018 NSDUH data. Sample included 122 pregnant and 3305 nonpregnant women who misused opioids. Descriptive statistics and bivariate analysis examined the variables between the groups of women.

Results: The sample (n=3427) women who misused opioids, 67.3% were 18-25 years old and 64.8% were non-Hispanic white. Both groups worked full time (36%), earned between $20,000 and $49,000 per year (34%), and never married (66.5%). Significant associations were noted among; age ($\chi2$=25.406, p=<0.001), race/ethnicity (LR=17.721, p=<0.007), geographic location ($\chi2$=7.585, p=<0.023), health insurance (LR=13.909, p=<0.016), tobacco use within the past year ($\chi2$=7.058, p=008), and alcohol use within the past month ($\chi2$=76.783, p=<0.001).

Implications: Study findings indicate 3.3% of pregnant women and 1.8% of nonpregnant women who misuse opioids perceive they have a need to obtain treatment. Further research is necessary to explore the construct of perceived need in this population, as well as, strategies to increase engagement.

Dedication

This dissertation is dedicated to the following people who were instrumental and supportive during the past three years. To my loving husband James, who was by my side everyday cheering me on and assisting me balance work, school, and family responsibilities. I couldn't have done it without him. James you are my soulmate; my rock. To my parents Gaye and Charlie, and my brother Tim, who always encouraged and supported me in pursuing my dreams. To my sweet son Andrew, who was patient while mommy was writing and is my inspiration to be the best version of myself.

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Table of Contents

List of Tables

List of Figures

Appendix

Chapter I

Introduction

Over 130 Americans die daily after overdosing on opioids (Centers for Disease Control and Prevention (CDC, 2018a). In 2016 alone, over 42,000 Americans died due to opioid overdose and for each of these fatal overdoses, there were more than 30 nonfatal overdoses (CDC, 2017a). One out of six overdose deaths in the United States from 1999-2014 resulted from an opioid overdose (Rudd, 2016). The economic burden of prescription opioid misuse in the United States is estimated at $78.5 billion a year (Florence, Zhou, Luo, & Xu, 2016). This includes the cost of healthcare, lost productivity, addiction treatment, and criminal justice involvement.

From 1999 to 2010 opioid use among women increased 4-fold (CDC, 2018b), and pregnant women have not been immune from opioid use disorders (OUDs). The prevalence of opioid use among pregnant women increased from 1.5 to 8 per 1,000 hospital deliveries (Wachman, Schiff, & Silverstein, 2018). This rise in OUD in pregnancy has resulted in an increase in fetal and neonatal mortality and morbidity (CDC, 2018b). Opioid use can result in placental abruption, stillbirth, or neonatal abstinence syndrome (NAS) (Maeda, Bateman, Clancy, Creanga, & Leffert, 2014). From 2004 to 2014, the incidence of (NAS) in the United States increased 433%. Sadly, a baby is born every 15 minutes in the US with NAS (Jilani et al., 2019). The estimated hospital cost is 1.5 billion (Patrick et al, 2015).

According to the National Survey of Substance Abuse Treatment Services (N-SSATS) only 46% of substance use treatment programs provided special programs or groups for adult women and only 21% offered programs or groups specially for pregnant

or postpartum women (SAMHSA, 2016). The reasons for this disparity are not well understood; however, the maternal and neonatal consequences of not receiving treatment for OUDs is well known.

Maternal and Neonatal Adverse Outcomes Related to OUDs

Withdrawal from opioids can cause significant physiological disruption, leading to poor outcomes for the mother and infant (Maeda et al., 2014). In addition to dying from an opioid overdose, having an OUD may place a pregnant woman at greater risk of experiencing violence, contracting Hepatitis C and Human Immunodeficiency Virus (HIV), or other sexually transmitted infections (Sutter, Gopman, & Leeman, 2017). Furthermore, opioid use can result in placental abruption, stillbirth, or (NAS) (Maeda et al., 2014). NAS is a clinical condition in which a neonate experiences various levels of irritability, temperature dysregulation, poor feeding, failure to thrive, and seizures due to the abrupt discontinuation of intrauterine exposure to opioids used by the mother during pregnancy (Kaltenbach et al., 2012; Kocherlakota, 2014). This condition may last for up to 10 weeks after delivery and may necessitate a prolonged hospital stay (Patrick et al., 2015). To prevent these adverse outcomes and provide appropriate treatment and services, it is imperative to understand factors that influence pregnant woman with an OUD to seek treatment.

Barriers to Seeking Treatment for OUDs

The National Institute on Drug Abuse (2018) defines addiction to substances as a chronic disease that can be managed and treated successfully. Regrettably, pregnant women with OUD face numerous barriers to treatment, including limited access to gender specific treatment, stigma, and fear of legal consequences (Saia et al., 2016).

Many women who are in caregiving roles often will not seek treatment or do not complete treatment because they are unable to manage their caregiving responsibilities and participate in treatment programs at the same time (Saia et al., 2016). Other concerns include fear their children will be removed from their custody (Angelotta, Weiss, Angelotta, & Friedman, 2016). The National Survey on Drug Use and Health (NSDUH) is an annual survey sponsored by SAMSHA, an agency of the UD Department of Health and Human Services. Since 1971, data were collected on substance use patterns and behaviors among non-institutionalized US civilians in order to inform public policy and monitor substance use trends (NSDUH, 2018a). This survey contains questions on the barriers to seeking opioid use treatment; however, no studies thus far address barriers among pregnant and no-pregnant women seeking treatment for opioid misuse. Limited reports and research using the NSDUH among pregnant and nonpregnant women with OUDs focus on the demographic and clinical characteristics of this population and predictors of opioids use.

NSDUH data from 2005 to 2014 of non-medical opioid use among pregnant women found a prevalence of 5% (Kozhimannil, Graves, Levy, & Patrick, 2017). Depression and anxiety were major risk factors for non-medical opioid use indicating two potential screening strategies for prevention. Kozhimannil et al. (2017) also found prior alcohol, tobacco, and marijuana use independently predicted non-medical opioid use among pregnant women. In 2015, NSDUH, broadened the list of prescription drugs to include 38 opioid medications (SAMHSA, 2015). Incorporating this new survey expansion, Marie, Coleman, Vignato, Arndt, & Segre, (2020) examined the use and misuse of prescription opioids by pregnant and nonpregnant women within the NSDUH

2015 to 2016. Maire et al. (2020) showed that race particularly white women were most

likely to use opioids. These studies and no others using NSDUH data have identified

barriers and facilitators to opioid treatment use among pregnant and nonpregnant women

who misuse opioids.

To address this gap the purpose of this study is to identify barriers and facilitators

related to opioid use treatment and recovery services among pregnant and nonpregnant

women who misuse opioids. The specific aims of the study are to (1) describe

demographic characteristics (age, race/ethnicity, education, marital status, health

insurance, employment, income, geographic location, and treatment setting), clinical

characteristics (health status, mental health status, and substance use), and opioid use

treatment and recovery services among pregnant and nonpregnant women who misuse

opioids, (2) examine the relationships among demographic characteristics, clinical

characteristics, perceived need for treatment, and facilitators/barriers to opioid use

treatment and recovery services among pregnant and nonpregnant women who misuse

opioids, (3) identify factors associated with increased odds of opioid use treatment and

recovery services among pregnant and nonpregnant women who misuse opioids.

Theoretical Model

The theoretical model underpinning the study is Andersen's Behavioral Model of

Health Service (1995). Andersen's (1995) model proposes people seek health services as

a function of three components; (1) predisposing characteristics, (2) enabling or impeding

factors, and (3) perceived need to seek professional help. Anderson (1995) defines

predisposing characteristics as age, gender, education, occupation, ethnicity. Secondly,

enabling factors are classified as community and personal resources for instance

geographic location, income, and health insurance. Thirdly, the need for care is described as the person's view of their own general health and functional state, as well as how they experience symptoms of illness, pain, and worries about their health and whether or not they judge their problems to be of sufficient importance and magnitude to seek professional help. Wu et al. (2016) utilized Andersen's Behavioral Model of Health Service when examining treatment utilization among persons with opioid use disorders in the United States. The relationships of the predisposing characteristics of age, sex, and race/ethnicity and enabling variables of insurance, income, and population density were used to organize correlates of receipt of opioid use treatment (Wu et al., 2016). This study and the knowledge of the following factors; middle age, white race, low income, non-metropolitan residence, mental health problems, and other substance use disorders are positively associated with deaths due to opioid overdose (Paulozzi, 2012; and Rudd et al., 2016) informed the decision to use Andersen's Behavioral Model of Health Service.

Figure 1. Andersen's Behavioral Model of Health Service (1995) reprinted from

Revisiting the Behavioral Model and Access to Medical Care: Does it Matter? R.

Andersen. *Journal of Health and Social Behavior, 36*(1), 1-10.

Conceptual Framework

The conceptual framework for this study is depicted in Figure 2. The independent variables identified as demographic characteristics (age, race/ethnicity, education, marital status, health insurance, employment, income, geographic location, and treatment setting), clinical characteristics (health status, mental health status, and substance use), perceived need for treatment, and barriers to treatment. The dependent variable of treatment use aligns with the concepts of (1) predisposing characteristics (2) enabling or impeding factors, and (3) perceived need to seek professional help.
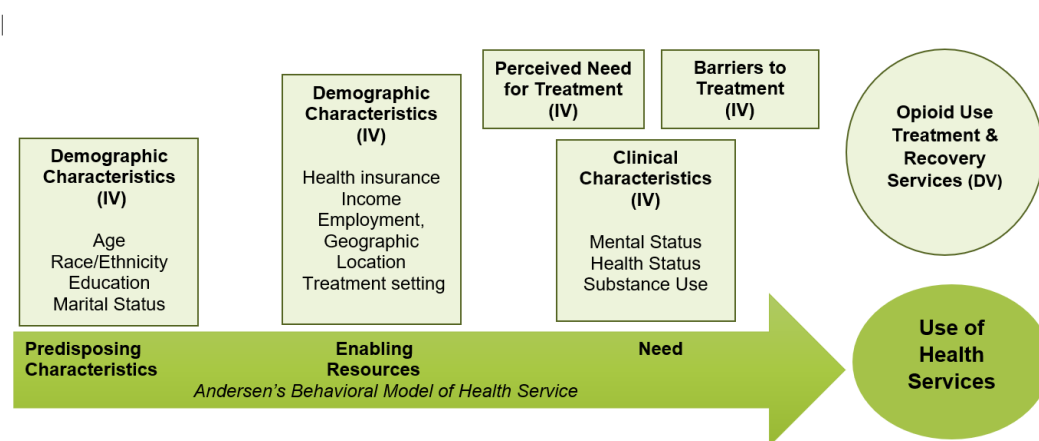
Figure 2. Conceptual Model

Implications for Nursing Science

The findings of this study will inform care providers and policy makers about the characteristics of pregnant and nonpregnant women who misuse opioids that increase the likelihood of them seeking treatment thus preventing death due opioid overdose and harm to unborn children. Many actions taken to mitigate the opioids crisis do not specially address the needs of pregnant women who misuse opioids, but rather address the general

public. Research is needed to clarify reasons pregnant and nonpregnant women seek opioid use treatment.

CHAPTER II

Review of the Literature

Background

According to the CDC (2019) opioids are defined as "natural or synthetic chemicals that interact with opioid receptors on nerve cells in the body and brain and reduce the intensity of pain signals and feelings of pain" (para1.) Similarly, Sharma, Bruner, Barnett, and Fishman (2016) define the term "opioids" as encompassing a class of drugs, both natural alkaloid compounds derived directly from the resin of the opium poppy for example heroin, as well as, related synthetic compounds including, oxycodone and hydromorphone. Opioids are recognized by a variety of names including opiates, opioids, and narcotics. The term opiates are used for close relatives of opium such as codeine, morphine and heroin, while the term opioids are used for the entire class of drugs including synthetic opiates such as Oxycontin and Fentanyl (CDC, 2019).

Opioids act primarily on three receptor types in the nervous system: mu, kappa, and delta receptors (Brady, McCauley, & Back, 2016). All members of the opioid drug class share common pharmacological features as agonists of the mu opioid receptor (Sharma et al., 2016). The mu receptor is primarily responsible for the analgesic and euphoric properties of opioid. The primary reason for prescribing opioids is to treat individuals experiencing moderate to severe pain often after receiving surgery, or to treat cancer (CDC, 2017c). In addition to understanding the mechanism of action and reason

for prescribing opioids, is it noteworthy to reflect upon the historical influences leading up to the present-day opioid crisis.

Historical Influences of the Opioid Crisis

The opium poppy plant has been documented as a medicinal plant as early as 3400 B.C. in southwestern Asia ("The Opium Kings", 1998). During this time the Sumerians referred to the opium poppy as the "joy plant" and the plant's euphoric effects soon spread to the Assyrians, Babylonians, and Egyptians ("The Opium Kings", 1998). In 460 B.C, Hippocrates acknowledged the opium poppy as a narcotic and mechanism to stop bleeding in treating medical conditions and epidemics.

The 1600s-1800s

In the 1600-1800s opium was traded throughout Persia, India, China, England, and the United States ("The Opium Kings", 1998). In the early 1800s the chemical properties of morphine, codeine, and thebaine from the opium poppy were identified and in 1827, E. Merck & Company of Darmstadt, Germany, commercially manufactured morphine ("The Opium Kings", 1998). In 1840, New Englanders brought 24,000 pounds of opium into the United States. This event, influenced the U.S. Customs to put a duty on the import and in 1890 the U.S. Congress, imposed a tax on opium and morphine ("The Opium Kings", 1998). From 1861-1865, medics in the Civil war used morphine to treat pain, and many soldiers became dependent on morphine ("Opioid Crisis Fast Facts", 2018).

The 1900s-1920s

In various medical journals during 1902, physicians discussed the side effects of using heroin as a morphine step-down cure (White & Callahan, 2014). Physicians

suggested their patients suffered from heroin withdrawal symptoms equal to morphine addiction ("The Opium Kings", 1998). In 1903, heroin addiction rose to alarming rates; leaving 1 in 200 Americans addicted to heroin (White & Callahan, 2014). In 1905 the U.S. Congress banned opium ("The Opium Kings", 1998), and in 1906 the U.S. Congress passed the Pure Food and Drug Act requiring contents labeling on patent medicines by pharmaceutical companies ("The Opium Kings", 1998). As a result, the availability of opiates and opiate consumers significantly declines. The first federal drug prohibition passes in the U.S. outlawing the importation of opium, 1909. The Harrison Narcotic Act of 1914 taxed and regulated the sale and distribution of opium and cocaine-based products requiring physicians and pharmacists, who handled opium and cocaine to register with the US Department of the Treasury ("Opioid Crisis Fast Facts", 2018). According to McCarty, Priest, and Korthuis (2018) the Treasury Department interpreted the statute as a prohibition against physicians prescribing narcotics to treat patients with a narcotic addiction. In 1923 the U.S. Treasury Department's Narcotics Division (the first federal drug agency) banned all legal narcotics sales. With the prohibition of legal venues to purchase heroin, individuals with an addiction to heroin were forced to buy from illegal street dealers ("The Opium Kings", 1998). Arrest and incarceration replaced clinical services as the preferred intervention for drug use and addiction. Between 1919 and 1924 physicians in 44 communities who operated morphine maintenance clinics, had them closed under threat of federal indictment (White & Callahan, 2014). This action lead to a booming black market in New York's Chinatown ("The Opium Kings", 1998).

The 1930s-1940s

During the 1930s most of illegal heroin smuggled into the U.S. came from China (Sacco, 2014). According to "The Opium Kings" (1998) in 1945, Burma gained independence from Britain at the end of World War II and opium cultivation and trade flourished. Another fact to note is resulting from the Great Depression of 1930s, the budget for the Federal Bureau of Narcotics (FBN) and number of narcotic officers were low. Moreover, marijuana was on the rise and being used recreationally. This drug was legal up until the passing of the Marijuana Tax Act of 1937 (Sacco, 2014). All states followed the Marijuana Tax Act of 1937 and banded the use of marijuana; thus, laying the foundation for criminalizing people with addiction disorders. For example, Henry Anslinger, the first commissioner of the FBN, informed Congress "the major criminal in the United States is the drug addict; of all the offenses committed against the laws of this country, the narcotic addict is the most frequent offender" (Sacco, 2014, p 3).

The 1950-1970s

In the 1950s, the US. efforts to contain the spread of Communism in Asia involved forging alliances with tribes and warlords ("The Opium Kings", 1998). The U.S. and France supplied the drug warlords and their armies with ammunition, arms, and air transport for the production and sale of opium. This resulted in an explosion in the availability and illegal flow of heroin into the United States and into the hands of drug dealers and addicts ("The Opium Kings",1998). Between 1965-1970 the U.S. involvement in Vietnam was blamed for the surge in illegal heroin being smuggled into the States ("The Opium Kings",1998). The number of heroin addicts in the U.S. reached an estimated 750,000 (Sacco, 2014). In 1963, the president's commission on Narcotic and Drug Abuse shifted its focus to support a medical approach for the treatment of addiction

and at the same time methadone maintenance became acceptable. Congress agreed with the president's commission and created a Bureau of Drug Abuse Control within the Department of Health and Education, but there remained a strong emphasis on law enforcement (Sacco, 2014). In 1968, the Bureau of Narcotic Control merged with the Federal Bureau of Narcotics and transferred to the Dept of Justice (Sacco, 2014). In 1970, President Nixon called for the "War on Drugs", placing greater emphasis on law enforcement as the primary strategy to address the heroin problem. The Controlled Substances Act (CSA) of 1970, (Title II of the Comprehensive Drug Abuse Prevention and Control Act) established federal U.S. drug policy on regulating the manufacture, importation, possession, use, and distribution of certain substances (Sacco, 2014). According to Christie, Baker, Cooper, Kennedy, and Madras (2017), the CSA was the national legislation for implementing the Single Convention on Narcotic Drugs. President Nixon created the Drug Enforcement Administration (DEA) governed under the Justice Department in 1973 to consolidate all federal powers of drug enforcement in a single agency (Sacco, 2014). The DEA, the enforcement branch of the CSA, was charged with registration of physicians, strict annual production quotas, chain-of-custody, and other regulatory oversight (Sacco, 2014).

The 1980s-1990s

The lack of robust evidence and misinformation. of the addictive properties of opioids were the catalysts for the present-day epidemic. Two studies set the stage promoting opioids were safe. Porter & Jick (1980) claimed addiction is rare in patients treated with narcotics, which fueled the acceptance opioids were safe. Subsequently, Porter & Jick's (1980) have been cited in over 600 articles. Additionally, Portenoy &

Foley's (1986) retrospectively examined 38 patients with non-malignant pain and concluded opioids were a more humane and safer treatment then surgery. This false sense of safety slowly eroded the preexisting knowledge of 1970s that opioids were addictive (Sacco, 2014).

Pharmaceutical company marketing. Coupled with a sense of safety, the 1990s brought aggressive marketing campaigns from the Purdue Pharma drug manufacture to promote the availability of a newer long-acting opioid called Oxycontin (Christie et al., 2017). Purdue Pharma neglected to reveal the potential abuse and harmful long-term consequences and are currently being sued (Raymond, 2018). The President's Commission Report claims this aggressive promotion of an oxycodone brand, from 1997-2002, led to a 10-fold growth in prescriptions to treat moderate to severe noncancer pain and increases in prescribing of other opioids (Christie et al., 2017).

In 2013, providers across the United States wrote a quarter of a billion of opioids prescriptions (Christie et al., 2017). This number would give every American adult at least one bottle of opioids. The most commonly prescribed opioids associated with opioid overdose include, methadone, oxycodone, and hydrocodone (CDC, 2017b). Volkow, Frieden, Hyde, and Cha (2014) argue 21 to 29 percent of patients prescribed opioids for chronic pain misuse them. Notably, about 80 percent of people who use heroin, first misused prescription opioids (Muhuri, Gfroerer, & Davies, 2013).

Pain seen as the 5th vital sign. Other influences leading to the opiod crisis include pressures in 1995 to treat patients pain and increase the awareness of untreated pain by external agencies for example, the American Pain Society (Gordon, Dahl, & Miaskowski, 2005). The phrase, "pain as the fifth vital sign," was initially promoted by

the American Pain Society in 1995, to elevate awareness of pain treatment among healthcare professionals. The Veteran's Administration and the Joint Commission on Accreditation of Healthcare Organizations adopted this stance and designated pain as a 'fifth' vital sign. Moreover, the Joint Commission, established a quality standard related to assessing and appropriately treating patient reported pain. This regulation has increased awareness and pressure for hospitals to meet this standard, as well as being tied to reimbursement by Medicare through the Value-based purchasing (Christie et al., 2017).

Physician education & prescribing practice. Additional contributing factors to the increase of opiod crisis was the lack of physician training on recognizing drug diversion, addiction, and signs of abuse (Orleans & Kaye, 2017). de Leon-Casasola (2013) estimates only 20% of US physicians have received training on recognizing addiction, drug diversion, and signs of abuse. According to Orleans and Kaye (2017) the pendulum has swung from being reluctant to prescribing to opioids to being excessive and liberal.

Rise of cheaper illicit drugs. According to the CDC (2017d) the current face of the opiod crisis includes the drive to purchase illicit drugs such as heroin and synthetic opioids i.e. fentanyl and analogs, acetylfentanyl, furanylfentanyl, and carfentanil. This has resulted from the unintended consequence of focused efforts to limit the quantity of prescription opioids (Christie el al., 2017). Heroin and fentanyl are cheaper than prescription opioids and unfortunately, Fentanyl is 50 times more potent than heroin and 100 times more potent than morphine. Carfentanil, is estimated to be 10,000 times more potent than morphine (CDC, 2017d). In 2016, there were more than 19,000 deaths related

to synthetic opioids (other than methadone) in the United States with the largest increases

in overdose deaths, in males aged 25-44 (CDC, 2017d)

      Insufficient prevention and treatment services. Failure to have a standardized

system approach to prevention and treatment has contributed to the current state of the

opioid crisis (Christie, et al., 2017). The American Society of Addiction Medicine

(ASAM) and the Addiction Policy Forum recommended a national public education

campaign, like the one developed for the AIDS epidemic in the 1980s, to raise awareness

that addiction is not a moral failing, but rather a chronic brain disease, and evidence-

based treatment is available (Christie et al., 2017, p. 40). Notably, quality treatment

services and the associated workforce did not expand in response to the growing crisis

(Christie et al., 2017). Many states do not cover all levels of care required for effective

treatment, as defined by the American Society of Addiction Medicine criteria.

Stunningly, 85% of all U.S. counties have no Opioid Use Treatment programs that

provide Medication Assisted Treatment (MAT) for people diagnosed with an opioid use

disorder (Christie et al., 2017).

      Further widening the treatment gap, is the outdated 1970s Institutions for Mental

Diseases exclusion rule (IMD). This rule prohibits federal funds to be used for Medicaid

patients requiring substance use treatment in residential treatment centers, greater than 16

beds (Nationally Alliance on Mental Illness (NAMI), 2018). These findings highlight the

many state-level disparities in coverage for substance use disorder treatment.

      Additional barriers to treatment include the lack of parity of Medicare

beneficiaries receiving inpatient care in psychiatric hospitals. For example, individuals

receiving care for opioid use disorders in psychiatric hospitals are capped to 190 days of

treatment over their lifetime (National Association of Psychiatric Health Systems, 2013). Treating mental health care benefits differently from any other medical condition is discriminatory. The 190-lifetime day restriction does not exist for any other condition being treated in general hospital.

Essential to slowing this epidemic is improved access to treatment and recovery services. Unfortunately, according to Collins (2018) 80% of the 2 million Americans with opioid use disorders do not receive appropriate or adequate treatment for their addiction. Additionally, there is not a great deal of support to show an increase in access to OUD services in the last 10 years (Wu, Zhu, & Swartz, 2016). Although the annual National Surveys on Drug Use and Health (NSDUH) has provided information on risk factors for OUD related to socioeconomic and demographic factors, few studies have identified factors related to use of treatment services. Only one study examined the association of demographics, socioeconomic factors, and behavioral health status with receipt of treatment (Wu, et al., 2016). Using NSDUH data 2005 to 2013, they found opioid treatment use varied from 24% with opioid dependence to 5% for those with opioid abuse. Blacks and Native Hawaiians had substantially decreased odds to accessing treatment and older age up to age 49 showed increased odds of treatment. This study showed no difference in treatment by gender.

At the federal level, the Department of Health and Human Services has established a framework consisting of 5 elements; strengthening public health surveillance, advancing the practice of pain management, improving access to treatment and recovery services, targeting the availability of distribution of overdosing reversal drugs, and supporting research (U.S. Department of Health & Human Services, n.d.)

Several federal agencies have focused efforts underneath one or more of these 5

strategies. For example, the National Institutes of Health (NIH) National Institute on

Drug Abuse (NIDA) is focused on providing research support on delivering safe effective

pain management, implementing overdose reversal agents, and developing innovative

opioid medication and technologies (Collins, 2018). The CDC focused on strengthening

public health data and reporting, supporting the prescription monitoring program, and

developing clinical guidelines for using opioids and non-opioids to treat chronic pain

(NIH, 2017). The Food and Drug Administration (FDA) developed an Opioid Policy

Steering Committee to address the following three areas; "(1) lowering overall exposure

to opioid drugs (2) enabling more opportunities for those currently addicted to opioid

drugs to seek MAT that can help them recover; and (3) helping expedite the development

of progressively more-effective abuse deterrent formulations of opioid drugs and non-

opioid alternatives for the treatment of pain" (NIH, 2017, par 53). Finally, the Substance

Abuse and Mental Health Services Administration (SAMHSA) has focused efforts on

improving access to treatment, prevention, and recovery services. According to NIH

(2017), SAMHSA administers the Opioid State Targeted Response (STR) grants,

authorized by the 21st Century Cures Act. In 2017, 485 million for the next 2 years were

to be distributed to states to assist in implementing prevention, treatment, and recovery

needs (NIH, 2017). SAMHSA expanded the existing Medication Assisted Treatment for

Prescription Drug and Opioid Addiction grants to six additional states to assist with

advancing utilization of medication assisted treatment for individuals with opioid use

disorder. In addition to expanding funding to states, SAMHSA expanded waiver limits for

physicians, nurse practitioners, and physician assistants, to treat up to 275 people (NIH, 2017).

At the state level, several states are addressing the opioids crisis by taking a public health-oriented approach focusing on building infrastructure. For example, after passage of Vermont Senate bill 303 in May 2000, permitting methadone treatment in Vermont, the state of Vermont created an integrated healthcare system for addiction treatment (Brooklyn & Sigmon, 2017). The state expanded Medicaid coverage to include buprenorphine and increased the amount of waiver trained providers. The "Hub and Spoke" Model has increased opiod use disorder treatment capacity, eliminated waiting lists, increased the number of waivered physicians, and saved the state 6.7 million in 2014 (Brooklyn & Sigmon, 2017).

The state of Virginia created an Addiction and Recovery Treatment Services (ARTS) Benefit that expanded coverage of substance use disorders for all Medicaid beneficiaries (Northam, 2018). This comprehensive continuum of addiction treatment services includes, inpatient detoxification, intensive, outpatient programs, partial hospitalization, residential treatment, office based opiod treatment, case management, and peer-support services. Virginia was the 4th state to gain permission form the federal government to expand Medicaid services to include residential treatment services (Northam, 2018). Additional results from these measures included, a 51% increase of individuals (10, 500) treated for opioid use disorders compared to 2016 and one third decrease of emergency department visits by Medicaid members within a 9-month period (Northam, 2018). This initiative illustrates the recognition that substance use disorder treatment extends beyond acute care services.

Additionally, Kentucky, Massachusetts, Maryland, Ohio, and West Virginia have addressed the opioid overdose problem by promoting the use of effective Medication Assisted Treatment (MAT) in the context of their Medicaid expansions (Frank & Glied, 2017). Consequently, states have been able to narrow the access to treatment gap through expansion of Medicaid services (Frank & Glied, 2017). It is imperative other states replicate and build upon these strategies, as well as, learn from successful initiatives conducted internationally.

Historically, United States drug policy was heavily weighted on supporting the supply side; focusing on the interdiction and eradication of drugs (Sacco, 2014). These efforts contributed to the lack of infrastructure and fragmented healthcare system of addiction services. While it is important to understand the historical context of policy that has shaped our belief system; it is wise to step back and examine the works of others. For instance, Portugal has created a supportive society in which individuals with substance use disorders can receive treatment for their addiction without the fear of being prosecuted (Greenwald, 2009). Since 2001, Portugal transitioned from a society of criminalization to one that provides treatment and supports harm reduction strategies for individuals with substances use disorders. Individuals with possession of any drug have 72 hours to appear in front of a commission to determine the course of action (Greenwald, 2009). Through an administrative process, individuals are evaluated to identify if their actions are related to trafficking a drug or are they requiring treatment for a substance use disorder. This public health-oriented approach has resulted in a 17% reduction of new drug-related cases of HIV between 1999 & 2003 (Greenwald, 2009). The number of Hepatitis C and B in treatment centers were reduced and the total number

of drug-related deaths decreased from the predecriminalization year of 1999

(approximately 400) to 290 deaths in 2006 (Greenwald, 2009).

Opioid Use Disorder during Pregnancy

The CDC (2019) defines drug misuse, "as the use of illegal drugs and/or the use of

prescription drugs in a manner other than as directed by a doctor, such as use in greater

amounts, more often, or longer than told to take a drug or using someone else's

prescription".

The Diagnostic and Statistical Manual of Mental Disorders, 5th Edition describes

opioid use disorder as a "problematic pattern of opioid use leading to problems or

distress, with at least two of the following occurring within a 12-month period"

(American Psychiatric Association, 2013, p. 541.)

1. Taking larger amounts or taking drugs over a longer period than intended.
2. Persistent desire or unsuccessful efforts to cut down or control opioid use.
3. Spending a great deal of time obtaining or using the opioid or recovering from its effects.
4. Craving, or a strong desire or urge to use opioids
5. Problems fulfilling obligations at work, school or home.
6. Continued opioid use despite having reoccurring social or interpersonal problems.
7. Giving up or reducing activities because of opioid use.
8. Using opioids in physically hazardous situations.
9. Continued opioid use despite ongoing physical or psychological problem likely to have been caused or worsened by opioids.
10. Tolerance (i.e., need for increased amounts or diminished effect with continued use of the same amount).
11. Experiencing withdrawal (opioid withdrawal syndrome) or taking opioids (or a closely related substance) to relieve or avoid withdrawal symptoms.

Maternal Adverse Outcomes Related to OUDs

The impact of OUDs among pregnant women can be devasting to the mother and

neonate (American College of Obstetricians and Gynecologists, 2017). Maeda et al.

(2016) analyzed 2007-2011data from the Nationwide Inpatient Sample (NIS) of the Healthcare Cost and Utilization Project sponsored by the Agency for Healthcare Research and Quality with the focus of examining trends in maternal outcomes with opioid abuse and dependence. Results revealed within a sample of 20,517,479 delivery admissions with and without opioid abuse or dependence, participants with opioid abuse or dependence were white, older in age, insured by Medicaid, and had significantly higher rates of depression, anxiety, HIV infection, tobacco use, alcohol, or other illicit drug use, chronic anemia, and previous cesarean delivery (p <.01 for all) when compared with those without an opioid abuse or dependence. Furthermore, participants with opioid abuse or dependence during pregnancy had increased odds of obstetrical morbidity and mortality, including in-hospital mortality (adjusted odds ratio [aOR], 4.6; 95% CI, 1.8 to 12.1), maternal cardiac arrest (aOR, 3.6; 95% CI, 1.4 to 9.1), intrauterine growth restriction (aOR, 2.7; 95% CI, 2.4 to 2.9), placental abruption (aOR, 2.4; 95% CI, 2.1 to 2.6), length of stay more than 7 days (aOR, 2.2; 95% CI, 2.0 to 2.5), preterm labor (aOR, 2.1; 95% CI, 2.0 to 2.3), oligohydramnios (aOR, 1.7; 95% CI, 1.6 to 1.9), transfusion (aOR, 1.7; 95% CI, 1.5 to 1.9), stillbirth (aOR, 1.5; 95% CI, 1.3 to 1.8), and premature rupture of membrane (aOR, 1.4; 95% CI, 1.3 to 1.6) (Maeda et al., 2016). Sutter et al. (2017) argue behaviors associated with OUDs among pregnant women places them at greater risk for skin infections related to intravenous drug use, hepatitis C and human immunodeficiency virus (HIV) from needle sharing and contracting sexually transmitted diseases. Almario, Seligman, Dysart, Berghella, and Baxter (2009) reported similar findings of higher percentages of infectious disease among the participants in their study of 258 opiate addicted gravid women treated with methadone. The most prevalent

infection was Hepatitis C Virus 53.5% (n=138). The percentage of HIV was 4.3% (n=11), which was much higher than the estimated prevalence of HIV in the United States at (0.4%). Their main finding was preterm birth among women with OUDs being treated with methadone (29.1%) was nearly 3 times the national average for singleton pregnancies (11.1%) in the United States.

Neonatal Adverse Outcomes Related to OUDs

NAS is a clinical condition in which a neonate experiences various levels of irritability, temperature dysregulation, poor feeding, failure to thrive, and seizures due to the abrupt discontinuation of intrauterine exposure to opioids used by the mother during pregnancy (Kaltenbach et al., 2012; Kocherlakota, 2014). Patrick, Davis, Lehmann, and Cooper (2015) conducted a retrospective cross-sectional analysis, using discharge data from the Kids' Inpatient Database (KID) for 2009 and 2012 and from the Nationwide Inpatient Sample (NIS) for 2010 and 2011. Results indicated infants with NAS were more likely than other hospital births to have the following complications, low birthweight (24.4% vs. 7.2%), transient tachypnea of the newborn (11.7% vs. 3.1%), meconium aspiration syndrome (2.8% vs. 0.4%), respiratory distress syndrome (4.5% vs. 2.0%), jaundice (32.8% vs. 19.1%), feeding difficulty (17.3% vs. 3.0%), seizures (1.4% vs. 0.1%), and possible sepsis (14.8% vs. 2.2%; $p<0.001$). Infants with NAS were also more likely than other hospital births to be insured by Medicaid (81.5% vs. 46.4%; $p<0.001$ (Patrick et al., 2015).

Barriers to Treatment for Pregnant Women with OUDs

The gold standard for treating pregnant women with OUDs is opioid agonist therapy, also known as medication-assisted treatment, with methadone or buprenorphine

in conjunction with a comprehensive program of obstetrical care and behavioral intervention (Klaman et al., 2017). Supporting the gold standard is research from a landmark study known as MOTHER (Maternal Opioid Treatment: Human Experimental Research (Jones et al., 2010). MOTHER is a multi-site international randomized controlled trial comparing methadone and buprenorphine treatment in opioid dependent pregnant women. This study involved 175 pregnant women with opioid dependency between 18 and 41 years with a singleton pregnancy. Gestation was between 6 and 30 weeks. One hundred and thirty-one participants completed the study defined as giving birth while receiving the double-blind study medication either methadone or buprenorphine. Primary findings showed neonates exposed to buprenorphine required 89% less morphine than did neonates exposed to methadone (mean total doses of 1.1 mg and 10.4 mg, respectively; $P<0.0091$ and spent, on average, 43% less time in the hospital (10.0 vs. 17.5 days, respectively; $P<0.0091$). Of note, Jones et al. (2010) point out the superiority of buprenorphine over methadone did not result in differences in the number of neonates requiring NAS treatment, peak NAS score, head circumference, any other neonatal outcome, or any maternal outcome; however it clearly shaped the path for buprenorphine to be used as an alternative to methadone for the treatment of opioid dependency during pregnancy.

Despite the compelling evidence of how to treat pregnant women with OUDs, barriers exist for receiving adequate treatment. These include limited access to gender specific treatment, stigma, provider bias, and fear of legal consequences (Saia et al., 2016). Many women who are in caregiving roles often will not seek treatment or do not complete treatment because they are unable to manage their caregiving responsibilities

and participate in treatment programs at the same time (Saia et al., 2016). Other concerns include fear their children will be removed from their custody (Angelotta, Weiss, Angelotta, & Friedman, 2016). NSDUH data from 2005-2014 of non-medical opioid use among pregnant women found a prevalence of 5% (Kozhimannil, Graves, Levy, & Patrick, 2017). Depression and anxiety were major risk factors for non-medical opioid use indicating two potential screening strategies for prevention. Kozhimannil et al. (2017) found prior alcohol, tobacco, and marijuana use independently predicted non-medical opioid use among pregnant women; however, this study and no others using NSDUH data have identified facilitators and barriers to opioid treatment use among pregnant women.

Chapter III

Methods

The purpose of the study is to identify barriers and facilitators to opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids. In this chapter a description of the design, sample, data collection, and analytic techniques is presented. The protection of human subjects and study limitations are also addressed.

These research questions for this investigation include: Among pregnant and nonpregnant women who misuse opioids;

1. What are the demographic and clinical characteristics and opioid use treatment and recovery services?

2. What relationships exist among demographic and clinical characteristics, perceived need, and facilitators/barriers to opioid use treatment and recovery services?

3. What factors are the most likely to contribute seeking opioid use treatment and recovery services?

The research questions will be answered through the following aims.

Specific Aims:

Aim I. Describe the demographic characteristics (age, race/ethnicity, education, marital status, health insurance, employment, income, geographic location, and treatment setting), clinical characteristics (health status, mental health status, and substance use), and opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids.

Aim II. Examine the relationships among demographic and clinical characteristics, perceived need for treatment, and facilitators/barriers to opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids.

Aim III. Identify factors associated with increased odds of opioid use treatment and recovery services among pregnant women who misuse opioids.

Research Design

A cross-sectional correlational design was used for this study. The focus of the study was to analyze data retrospectively collected from the 2016 to 2018 NSDUH to identify barriers and facilitators to opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids. It is considered cross-sectional

because the independent and dependent variables were collected at single points in time

(Polit & Beck, 2017).

Sample Cases

The study sample consisted of (n=122) pregnant women who misuse opioids and

(n=3305) of nonpregnant women who misuse opioids. Opioids included heroin and 38

prescription pain relivers. Misuse is defined as ever, even once, used any prescription

pain reliever in any way a doctor did not direct you to use it including; using it without a

prescription of your own; using it in greater amounts, more often, or longer than you

were told to take it, and using it in any other way a doctor did not direct you to use it. as

is of US civilian pregnant women aged 18 and over with OUDs identified within the

NSDUH database during 2016 to 2018.

Inclusion criteria. US civilian, non-institutionalized pregnant and nonpregnant

women aged 12 to 49 years of age who misused opioids within the past year. This

includes pregnant and nonpregnant women living in shelters, rooming houses,

dormitories, migratory workers' camps, halfway houses, as well as, civilians living on

military bases.

Exclusion criteria. US civilian, non-institutionalized pregnant and nonpregnant

women who misuse opioids aged 12 to 49 years of age who are homeless, do not use

shelters, military personnel on active duty, or residents of institutional quarters, i.e. jails

and hospitals were excluded from the study.

Data Source

The NSDUH is an annual survey sponsored by SAMSHA, an agency of the UD

Department of Health and Human Services. Since 1971, data were collected on substance

use patterns and behaviors among non-institutionalized US civilians in order to inform

public policy and monitor substance use trends (NSDUH, 2018b). RTI International, a

contracted organization with offices based in the US and internationally conducts the

annual data collection (RTI International, 2015).

Sample Size & Configuration

The 2016 and 2017 NSDUH datasets have approximately 4500 pregnant women.

In order to calculate the sample size of the subgroup of pregnant women with OUDs, a

calculation of 5% was applied. This estimate was based upon 5% of pregnant women

with OUDs calculated in the 2005-2014 NSDUH datasets by Kozhimannil et al. (2017).

An estimated sample size of 225 was used to estimate the effect size. The effect size was

calculated using a G-Power calculation with 80% power, two-tailed significance level of

0.05, and sample size of 225. The effect size expressed in an odds ratio is expected to be

1.62 or higher. There is no consensus on the approach to compute the power and sample

size with logistic regression; although Katz (2006) suggests, ten cases for each

independent variable is appropriate. A minimum of 20 cases per variable should be used

to overcome variability in frequencies. In logistic regression an estimate of the

probability of a certain event occurring is made, rather than detecting the difference or

relationship that may be present, such as in linear regression. No assumptions are made

about the dependent variable (Munro, 2005). Unfortunately, the number of pregnant

women who misused opioids in this study was 122; therefore, limiting the ability to

sufficiently power the study need to run a logistic regression.

Measurement

Table 1. Variables and Operational Definitions

Variable Name	Operational Definition (as defined by the National Survey on Drug Use and Health Dataset 2016 to 2018)
Opioid Use Treatment and Recovery Services (Dependent variable)	Self-report of treatment or counseling designed to help reduce or stop heroin and prescription pain relivers misuse. Includes detoxification and any other treatment for medical problems associated with your heroin and prescription pain relivers misuse use. Included currently receiving treatment and or received treatment in the past 12 months.
Demographic (Independent Variable IV): Age, Race, Ethnicity, Education, & Marital status, Pregnancy	Age: Groups 12-17, 18-25, 26-34, 35-49 Race/Ethnicity: Non-Hispanic White, Non-Hispanic Black or African American, Non-Hispanic American Indian or Alaska Native, Non-Hispanic Native Hawaiian/other Pacific Islander, Non-Hispanic Asian Education: Less than high school, some college credit, no degree, associate degree, college graduate or higher. Marital Status: married, widowed, divorced, or separated, never been married Pregnancy: Yes or No
Demographic (IV): Health insurance, income, employment, geographic location of the US, and treatment setting	Health insurance: Yes, includes Medicare, Champus, Private health insurance, other health insurance Income: Less than 20,000, 20,000-49,999, 50,000-74,999,75,000 or more Employment: employed full time, employed part time, unemployed, other Geographic Location of the US: small, large, non-metro county area Treatment setting: Hospital overnight inpatient Residential Drug/alcohol rehabilitation facility overnight Drug or alcohol rehabilitation facility outpatient Mental health center or facility outpatient Emergency Room Private doctor's office Prison or jail Self-help group, Alcoholic/Narcotics Anonymous Other place

Home, family, friends
Counselor, therapist, psychologist, psychiatrist
Court-mandated/sponsored program
Methadone clinic/program
Name of facility given
Faith based formal program/facility
Clinic, type unspecified

Barriers to treatment (IV)	Yes=Couldn't afford - no health care coverage Treatment not covered on health care No transportation, too far away, not convenient Treatment not found for type wanted No openings in the programs Didn't know where to get treatment Treatment might cause neighbors to have negative opinion Treatment might have negative effect on job You didn't have time (job, childcare, or other comment) Didn't want others to find out you needed treatment Some other reason or reasons
Perceived need for treatment (IV)	Yes=need treatment for use of heroin past 12 months or prescription pain relievers past 12 months
Clinical Characteristics (Mental Status) (IV)	Serious psychological distress indicator past month (Kessler 6 total score in past month > =13) Major Depressive Episode Past Year Suicide Thought: seriously thought about killing self in the past year Suicide Plan: made plans to kill self in past year Suicide Attempt: attempted to kill self in past year
Clinical Characteristics (Health Status) (IV)	Self-report of ever been told to have Hepatitis B/C and HIV/AIDS
Clinical Characteristics (Substance Use)	Tobacco Use Past Month and Past Year Alcohol Use Past Month and Past Year Tobacco Use Past Month and Past Year Cocaine Use Past Month and Past Year Marijuana Use Past Month and Past Year

RTI International Data Collection

For the ongoing national study, stratified random sampling by state including the

District of Columbia and household address are used. After consent is obtained

professional interviewers from RTI International conduct the face-to- face interviews within the participant's dwelling. Audio computer assisted self-interviewing and computer assisted personal interviewing is offered to the participants and their answers to the questions are entered into a laptop computer provided by the interviewer. Participants are provided a $30 incentive for completing the survey. Access to the previously collected data is available for download on the SAMHSA website.

Data Analysis Plan

First, descriptive statistics using the Statistical Package for the Social Sciences were computed to describe the variables. Frequencies and percentages were calculated to describe (Aim #1); the demographics & clinical characteristics, perceived need for treatment, barriers to treatment & treatment use among pregnant women with OUDs. Bivariate analysis using Chi-squared were calculated to examine the association and strength of the relationships between the variables of Aim #2, which is to examine the relationship between treatment use among pregnant women with OUDs, demographics, clinical characteristics, perceived need for treatment, and barriers to treatment. Upon completion of the bivariate analysis, it was determined that Aim #3; to identify the odds of treatment use among pregnant women who misused opioids as accounted for demographic and clinical characteristics, perceived need for treatment, and barriers to treatment could not be performed due to a small sample size, n=122.

Protection of Human Subjects

Data collected from the NSDUH Survey is kept confidential by SAMHSA and RTI International, a contracted third party who conducts the NSDUH Survey. Both parties abide by the Confidential Information Protection and Statistical Efficiency Act of 2002,

which under federal law protects the confidentiality of participants responses. All researchers and project staff are required to sign a confidentiality agreement. Furthermore, the full names of the participants are not collected nor are associated with actual addresses (NSDUH, n.d.). Survey data published on SAMHSA public websites do not have individual participant identifying data. Additionally, the study was submitted, reviewed, and approved by the Institutional Review Board of the University of San Diego (See Appendix).

Summary

The focus of this cross-sectional retrospective study was to analyze retrospective data collected, 2016 to 2018 (NSDUH) to identify barriers and facilitators to opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids. Study participants include US civilian, non-institutionalized pregnant and nonpregnant women aged 18 to 49 years of age who misuse opioids living in shelters, rooming houses, dormitories, migratory workers' camps, halfway houses, as well as, civilians living on military bases. Independent variables consist of demographic and clinical characteristics, perceived need for treatment, and barriers to treatment. The dependent variable is opioid use treatment and recovery services. The findings of this study will inform care providers and policy makers about the characteristics of pregnant and nonpregnant women who misuse opioids. This knowledge will assist them provide treatment, thus preventing death due opioid overdose and harm to unborn children.

Chapter IV

Results

The purpose of the study is to identify facilitators and barriers related to opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids. The results are presented in this chapter in accordance with the related research questions and specific aims.

Demographic Characteristics of Study Sample

Research Question #1

What are the demographic and clinical characteristics, and opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids. Table 2 and 3 address the specific aim #1 of describing the demographic characteristics (age, race/ethnicity, education, marital status, employment, health insurance, income, geographic location, and treatment setting), clinical characteristics (health status, mental health status, and substance use), and opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids.

Within the National Survey for Drug Use and health between 2016 to 2018, a total of 3427 women misused opioids. One hundred and twenty-two of these women identified as being pregnant at the time of the survey. Out of the 122 pregnant women who misused opioids, 54.9% ranged in age from 18-25 years of age and 64.8% were non-Hispanic white. These findings were similar among nonpregnant women who misused opioids. Forty percent were between 18- 25 years old and 59.8 % identified as non-Hispanic white. The majority of both groups work full time, earning between $20,000 and $49,000 per year, and never been married (Table 2). Noted differences, include, 31.1% of pregnant women who misused opioids completed high school or had a GED whereas only 21.1% of the nonpregnant women completed high school or have a GED. Furthermore, of those

pregnant women who misused opioids, 41% live in small metro areas of the united states, whereas 43% of the nonpregnant women live in large metro areas. Interestingly, 93% of pregnant women and 85 % of nonpregnant women who misused opioids in the sample had some form of health insurance that included either Medicare, Medicaid/CHIP, Champus, or private health insurance.

With regards to treatment settings, of those women who sought treatment and recovery services for opioids, 20% of pregnant women and 67% of nonpregnant women who misused opioids obtained treatment in either at an outpatient mental health center or facility while 33% of pregnant women and 23.5 % of nonpregnant women who misused opioids went to an outpatient drug or alcohol rehabilitation services. Only 15 pregnant women who misused opioids responded to the question of received and or currently receiving treatment for misusing opioids and 311 nonpregnant women who misused opioids responded to this question.

Table 2. Demographic Characteristics of Pregnant and Nonpregnant Women Who

Misused Opioids in the last year.

Characteristics	Total Sample		Pregnant Women Misusing Opioids in last Year		Nonpregnant Women Misusing Opioids in last Year	
	(n) 3427	%	(n) 122	%	(n) 3305	%
Age						
12-17 Years Old	(727)	29.8	(7)	5.7	(720)	21.8
18-25 Years Old	(1361)	39.7	(67)	54.9	(1294)	39.2
26-34 Years Old	(826)	24.1	(36)	29.5	(790)	23.9
35-49 Years Old	(513)	14.9	(12)	9.8	(501)	15.2
Race/Ethnicity						
White	(2055)	59.9	(79)	64.8	(1976)	59.8
Black/African American	(387)	11.29	(11)	9.0	(376)	11.4
Native American/Alaska Native	(76)	2.22	(8)	6.6	(68)	2.1
Native HI/Other Pac Isl	(20)	0.583	(2)	1.6	(18)	0.5
Asian	(70)	2.04	(0)	0.0	(70)	2.1
More than one race	(194)	5.66	(7)	5.7	(187)	5.7
Hispanic	(625)	18.23	(15)	12.3	(610)	18.5
Education						

<High School	(1076)	31.40	(28)	23.0	(1048)	31.7
High School/GED	(736)	21.48	(38)	31.1	(698)	21.1
Some College Credit, no degree	(851)	2.36	(32)	26.2	(819)	24.8
Associates Degree	(266)	7.76	(8)	6.6	(258)	7.8
College Graduate or Higher	(498)	14.53	(16)	13.1	(482)	14.6
Marital Status						
Married	(620)	18.09	(32)	26.2	(588)	17.8
Widowed	(18)	0.52	(0)	0.00	(18)	0.52
Divorced or Separated	(279)	8.14	(6)	4.9	(273)	8.3
Never Been Married	(2280)	66.5	(82)	67.2	(2198)	66.5
Respondent is <= 14 years old	(230)	6.71	(2)	1.6	(228)	6.9
Employment						
Employed full time	(1234)	36.0	(42)	34.4	(1192)	36.1
Employed part time	(663)	19.35	(18)	14.8	(645)	19.5
Unemployed	(359)	10.47	(20)	16.4	(339)	10.3
Other	(941)	27.46	(40)	32.8	(901)	27.3
12-14-year old	(230)	6.71	(2)	1.6	(228)	6.9
Income						
Less than $20,000	(971)	28.33	(42)	34.4	(929)	28.1
$20,000 - $49,999	(1170)	34.1	(44)	36.1	(1126)	34.1
$50,000 - $74,999	(483)	14.09	(15)	12.3	(468)	14.2
$75,000 or More	(803)	23.43	(21)	17.2	(782)	23.7
Geographic Location						
Large Metro	(1458)	42.54	(38)	31.1	(1420)	43.0
Small Metro	(1258)	36.71	(50)	41.0	(1208)	36.6
Nonmetro	(711)	20.75	(34)	27.6	(677)	20.5
Health Insurance						
Has Health Insurance	(2927)	85.41	(113)	92.6	(2814)	85.1
Treatment Setting						
Hospital overnight as inpatient	(11)	3.37	(2)	13	(9)	2.9
Residential drug/alcohol rehabilitation facility overnight	(29)	8.89	(2)	13	(27)	8.7
Drug or Alcohol Rehab facility as outpatient	(78)	23.93	(5)	33	(73)	23.5
Mental Health Center or Facility as outpatient	(70)	21.47	(3)	20	(67)	21.5
Emergency Room	(1)	0.31	(0)	0	(1)	0.32
Private Doctor Office	(54)	16.56	(1)	6.6	(53)	17
Prison or jail	(6)	1.84	(0)	0	(6)	1.9
Self-Help Group, Alcoholic/Narcotics Anonymous	(42)	12.58	(1)	6.6	(41)	13.2
Other Place	(7)	2.15	(0)	0	(7)	2.3
Home, Family, Friends	(2)	0.613	(0)	0	(2)	0.64
Counselor, therapist, psychologist, psychiatrist	(9)	2.76	(1)	6.6	(8)	2.57
Court-mandated/sponsored Program	(1)	0.307	(0)	0	(1)	0.32
Methadone Clinic/Program	(7)	2.15	(0)	0	(7)	2.3
Name of facility/Program	(6)	1.84	(0)	0	(6)	1.9
Faith-Based Formal Program/facility	(2)	0.613	(0)	0	(2)	0.64
Clinic-Type Unspecified	(1)	0.306	(0)	0	(1)	0.32

Clinical Characteristics of Study Sample

The ACOG Committee on Health Care (2017) claims that opioid dependence among pregnant women places them at a higher risk to of experiencing HIV, and Hepatitis B or C. Four out of 36 pregnant women and 89 out of 970 non pregnant women who misused opioids in the past year reported having Hepatitis B or C. No pregnant women and 5 out of 970 nonpregnant women who misused opioids reported having HIV or AIDs (Table 2). Within the past month 29.6% of pregnant women who misused opioids claim to have a serious mental illness and 23.5% experienced a major depressive episode with the past year. Thirty-three percent of pregnant women and 24.3 % of nonpregnant report attempting to end one's life. Women in this sample report using other substances in addition to misusing opioids. Marijuana use in past month was reported by 32.8% pregnant and 38.1% nonpregnant women; alcohol use as the next most frequently reported substance used; 22% for pregnant women and 61.7% for nonpregnant women (Table 3). Examining treatment variables indicated low frequencies. Thirteen of 122 pregnant women (10.7%) compared to 6.5% of nonpregnant women who misused opioids received treatment in the last year or are currently receiving treatment; 3.3% of pregnant women and 1.8% of nonpregnant women perceive they have a need to obtain treatment for misusing opioids.

Table 3. Clinical Characteristics of Pregnant and Nonpregnant Misusing Study

   Participants.

Characteristics	Total Sample		Pregnant Women Misusing Opioids in last Year		Nonpregnant Women Misusing Opioids in last Year	
	(n)	%	(n)	%	(n)	%
Health Status						
Hepatitis B or C	(1006)	9.2	(4)	11.1	(89)	9.2
HIV or AIDs	(1006)	0.49	(0)	0	(5)	0.5
Mental Health Status						
Serious Psych Distress Past Month	(2700)	30.3	(34)	29.6	(783)	30.3
Major Depressive Episode Past year	(2700)	28.67	(27)	23.5	(747)	28.9
Suicide						
Thought	(2675)	22.65	(24)	21.2	(582)	22.7
Plan	(606)	43.23	(10)	41.7	(252)	43.3
Attempt	(605)	24.62	(8)	33.3	(141)	24.3
Other Substance Use						
Tobacco Past Month	(3427)	47.68	(62)	51	(1572)	47.5
Tobacco Past Year	(3427)	57.16	(84)	68.9	(1875)	56.7
Cocaine Past Month	(3427)	5.31	(3)	2.5	(179)	5.4
Cocaine Past Year	(3427)	15.26	(17)	13.9	(506)	15.3
Marijuana Past Month	(3427)	37.93	(40)	32.8	(1260)	38.1
Marijuana Past Year	(3427)	55.12	(77)	63	(1812)	54.8
Alcohol Past Month	(3427)	60.26	(27)	22	(2038)	61.7
Alcohol Past Year	(3427)	81.70	(99)	81	(2701)	81.7
Treatment						
Perceived Need for Opioid Use Treatment	(3427)	1.87	(4)	3.3	(60)	1.8
Barriers to Treatment	(3427)	2.62	(5)	4.1	(85)	2.6
Received or Currently Receiving Treatment for Opioid Misuse	(3427)	6.62	(13)	10.7	(214)	6.5

Research Question #2

What relationships exist among demographic and clinical characteristics,

perceived need for treatment, and facilitators/barriers to opioid use treatment and

recovery services among pregnant and nonpregnant women who misuse opioids?

Specific Aim #2

Examine the relationships among demographic and clinical characteristics,

perceived need for treatment, and facilitators/barriers to opioid use treatment and

recovery services among pregnant and nonpregnant women who misused opioids.

A bivariate analysis using Chi-squared and Fisher's Exact tests of association were conducted on categorical variables (Table 4). Significant associations were noted with six variables; age ($\chi2=25.406$, df=3, p=<0.001), race/ethnicity (LR=17.721, df=6, p=<0.007), geographic location ($\chi2=7.585$, df=2, p=<0.023), health insurance (LR=13.909, df=5, p=<0.016), tobacco use within the past year ($\chi2=7.058$ df=1, p=008), and alcohol use within the past month ($\chi2=76.783$, df=1, p=<0.001). Health status variables of Hepatitis B/C and HIV/AIDS, and, mental health status indicators were not significant (Table 4). Perceived need for treatment, barriers to treatment, and currently and received treatment for opioid misuse were not significant within this sample of women.

Table 4. Associations between Demographic and Clinical characteristics, Perceived Need for Treatment, and Facilitators/Barriers to Opioid Use Treatment and Recovery Services among Pregnant and Nonpregnant Women Who Misuse Opioids.

Characteristics	Pregnant Women Misusing Opioids in last Year	Nonpregnant Women Misusing Opioids in last Year	Statistical Test	df	p-value
	Total (n)	Total (n)			
Age	122	3305	$\chi2=$ 25.406	3	<0.001*
Race/Ethnicity	122	3305	Likelihood Ratio17.721	6	.007*
Education	122	3305	$\chi2=$ 8.895	4	.064
Marital Status	122	3305	$\chi2=$ 6.243	3	.100
Employment	122	3305	$\chi2=$ 5.82	3	.152
Income	122	3305	$\chi2=$ 4.173	3	.243
Geographic location	122	3305	$\chi2=$ 7.585	2	.023*
Health Insurance	113	2814	Fisher's Exact Test		.018*
Health Status					
HEP B/C	36	970	Fisher's Exact Test		.567
HIV/AIDS	36	970	Fisher's Exact Test		1.0
Mental Health Status					
Serious Psych Distress Past Month	115	2585	$\chi2=$.027	1	.868
Major Depressive Episode Past Year	115	2585	$\chi2=$1.581	1	.209

Suicide Thought	113	2562	$\chi2 = .135$	1	.713
Suicide Plan	24	582	$\chi2 = .025$	1	.874
Suicide Attempt	24	581	$\chi2 = 1.020$	1	.312
Substance Use					
Tobacco Past Month	122	3305	$\chi2 = .500$	1	.480
Tobacco Past Year	122	3305	$\chi2 = 7.058$	1	.008*
Cocaine Past Month	122	3305	$\chi2 = 2.046$	1	.153
Cocaine Past Year	122	3305	$\chi2 = .172$	1	.678
Marijuana Past Month	122	3305	$\chi2 = 1.423$	1	.233
Marijuana Past Year	122	3305	$\chi2 = 3.268$	1	.071
Alcohol Past Month	122	3305	$\chi2 = 76.783$	1	<0.001*
Alcohol Past Year	122	3305	$\chi2 = .026$	1	.871
Treatment					
Perceived Need for Treatment	122	3305	Fisher's Exact Test		.241
Barriers to Treatment	122	3305	Fisher's Exact Test		.252
Received or Currently Treatment for Opioids	122	3305	$\chi2 = .325$	1	.068

*statistical significance $\leq = 0.05$

Research Question #3.

What factors are the most likely to contribute to receiving opioids misuse treatment and recovery services among pregnant women who misuse opioids?

Specific Aim #3.

Identify factors associated with increased odds of opioid misuse treatment and recovery services among pregnant women who misuse opioids. Unfortunately, the sample size for pregnant women who misused opioids (n=122) was small and lacked sufficient power, thus a logistic regression was not conducted. This subgroup of women who misused opioids, 4 out of 122 (3%) perceived they had a need to receive treatment for opioids and 13 of 122 (10.7%), 5 pregnant women who misused opioids out of 122 identified barriers to receiving treatment, and 13 of these women actually received or are currently receiving treatment for opioid misuse. These low frequencies limit the ability to reliability predict factors associated with increased odds of receiving opioid misuse treatment.

Chapter V

The purpose of this study was to identify facilitators and barriers related to opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids. Discussion of study findings, limitations, and implications for nursing and future research will be examined in this chapter.

Discussion of Findings

Three years of NSDUH data, 2016-2018, indicated 3427 females misused opioids. Within this group, 122 reported being pregnant at the time of the survey. The following 3 research questions were proposed; (1) What are the demographic and clinical characteristics, and opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids? (2) What relationships exist among demographic and clinical characteristics, perceived need for treatment, and facilitators/barriers to opioid use treatment and recovery services among pregnant and nonpregnant women who misuse opioids? and (3) What factors are the most likely to contribute to receiving opioids misuse treatment and recovery services among pregnant women who misuse opioids? Two out of the three research questions were answered.

Similarities and differences exist between the demographic and clinical characteristics of the 2 groups of opioid misusing females (pregnant and nonpregnant women). Both groups had higher frequencies among the 18-25 years of age range group, as well as, 64.8% of pregnant women misusing opioids and 59.8% of nonpregnant women identified as non-Hispanic white. These data are consistent with findings from Kozhimannil et al (2017) who examined 2005-2014 NSDUH data for pregnant women misusing prescription opioids within the past year and past month. Results included

63.3 % were less than or equal to 25 years of age and 66.8% were non-Hispanic Caucasian. Additional like variables between the 2 groups of opioid misusing females, included, never being married, working full time, and seeking treatment in an outpatient drug or alcohol rehabilitation. Similar work by Kozhimannil et al. (2017) indicated 70.4% of pregnant women misusing prescription opioids were not married.

Differing demographic characteristics between the 2 groups included level of education and geographic location. Pregnant women misusing opioids (31.1%) had high school or a GED whereas 31.7% of nonpregnant women misusing opioids had less than high school education. In contrast 36.9% of pregnant women misusing prescription opioids indicated some post-secondary level of education (Kozhimannil et al., 2017). Furthermore, pregnant women who misused opioids, 41% live in small metro areas of the united states, whereas 43% of the nonpregnant women live in large metro areas.

Common clinical characteristics of both groups were the presence of serious psychological distress and the use of additional substances such as cocaine, marijuana, and alcohol. Significant associations were noted with six variables; age ($\chi2$=25.406, df=3, p=<0.001), race/ethnicity (LR=17.721, df=6, p=<0.007), geographic location ($\chi2$=7.585, df=2, p=<0.023), health insurance (LR=13.909, df=5, p=<0.016), tobacco use within the past year ($\chi2$=7.058 df=1, p=008), and alcohol use within the past month ($\chi2$=76.783, df=1, p=<0.001).

These results are consistent with Maeda et al. (2016) analysis of 2007-2011data from the Nationwide Inpatient Sample (NIS) of the Healthcare Cost and Utilization Project sponsored by the Agency for Healthcare Research and Quality. Results revealed within a sample of 20,517,479 delivery admissions with and without opioid abuse or

dependence, participants with opioid abuse or dependence were white, insured by Medicaid, and had significantly higher rates of depression, anxiety, tobacco use, alcohol, or other illicit drug use, (p <.01 for all) when compared with those without an opioid abuse or dependence.

Kozhimannil et al. (2017) found prior past year of alcohol [AOR,1.56; 95% CI, 1.11-2.17], tobacco [AOR, 1.72; 95% CI, 1.17-2.53], and marijuana use [AOR, 3.44; 95% CI,2.47-4.81] use independently predicted non-medical opioid use among pregnant women. Qato, Zhang, Gandhi, Simoni-Wastila, and Coleman-Cowger (2020) examined the co-use of alcohol, tobacco, and licit and illicit controlled substances among pregnant and nonpregnant women in the United States. Their findings revealed determinants of co-use among pregnant women to include: younger age, 18–25 years compared to those ≥ 26 years [AOR(95% CI): 1.81(1.18, 2.80)]; lower income (< $30,000 USD annually) compared to the highest income bracket (≥$50,000 USD) [AOR 1.65(1.09, 2.48)]; and prior history of substance use [AOR 5.42 (3.59, 8.20)]. They found lower odds of co-use in Hispanic women compared to white women [AOR 0.54 (0.31, 0.94)]; married versus unmarried women [AOR 0.54 (0.34, 0.87)]; women with public vs. private insurance [AOR 0.54 (0.32, 0.89)].

Unfortunately, the ability to determine what factors are most likely to contribute to pregnant women who misuse opioids receiving opioid use treatment and recovery services was challenging to ascertain due to small sample size and lack of sufficient power. Sadly, 10.7% of pregnant women misusing opioids and 6.5 % of nonpregnant women misusing opioids received or is currently receiving treatment for opioid misuse. Only 5 out of 122 of pregnant women misusing opioids and 214 out of 3305 of

nonpregnant women misusing opioids identified barriers to treatment. Barriers for the 5

pregnant women included unable to afford treatment, stigma, lack of time due to

childcare, job, or other commitments, lack openings in treatment program, and or no

transportation. Similar findings were reported by 20 pregnant women receiving opioid

misuse treatment at care facility at John Hopkins (Frazer, McConnell, & Jansson, 2019).

This qualitive study revealed the following barriers to treatment themes: not wanting to

leave children or partner at home, fear of punitive measures or loss of custody, lack of

information about treatment options, concerns about judgement and stigma, and lack of

transportation. The NSDUH 2016-2018 data does not include "fear of losing custody of

child" in the list of options for barriers to treatment. There is evidence that would support

adding this question to future NSDUH surveys. Angelotta et al. (2016) claim fear of

losing custody of children is a barrier for seeking substance use treatment. Of note, 90%

of the participants (n=20) in the Frazer et al. (2019) study were identified as motivated

for treatment and received substance use treatment prior to the study. This population

differs from the NSDUH 2016-2018 sample (n=122). This sample showed only 3.3 % of

pregnant women misusing opioids and 1.8 % of nonpregnant women misusing opioids

perceive they have a need for opioid use treatment. Although these numbers are not

statically significant; recognition of these staggering low percentages and response rates

shine a light on the need to address the issue of perceived need for treatment.

Limitations

Limitations to the study include survey results based on self-report, potentially

creating social-desirability bias. Additionally, the cross-sectional data collection prevents

causal interpretation (Wu et al., 2016) and NSDUH excludes the homeless individuals,

military personnel on active duty, and residents of institutional group quarters limiting the generalizability of these populations. Additionally, the sample size of the pregnant women misusing opioids was too small and lacked sufficient power, thus a logistic regression was not conducted.

<div align="center">

Importance to Nursing Practice, Education and Policy

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The maternal and neonatal consequences of not receiving treatment for OUDs is well known. To address these issues many professional organizations and agencies such as the American Society of Addiction Medicine (Kampman, & Jarvis 2015), American College of Obstetricians and Gynecologists (2017) and SAMSHA (2018) have provided clinical guidelines and recommendations. Additionally, aggregate reports of substance use during pregnancy are available (SAMSHA, 2016 & CDC, 2018) however, they are often described in broad terms. Despite these resources, there remains a need to better understand the demographic and clinical characteristics of pregnant women who misuse opioids to inform prevention, screening, and treatment efforts (Patrick et al.,2015). Results from the NSDUH 2016-2018 data indicate a disproportionate amount of 18-25-year-old non-Hispanic white misuse opioids during pregnancy. As well, significant associations between pregnant and nonpregnant women misusing opioids were noted with age, race/ethnicity, geographic location, health insurance, tobacco use within the past year, and alcohol use within the past month. Although, not statically significant, it is clinically important to recognize 3.3 % of pregnant women misusing opioids and 1.8 % of nonpregnant women misusing opioids perceive they have a need for opioid use treatment. It is unknown to what effect the lack of perceived need for treatment contributes to the 10.7% of pregnant women misusing opioids and 6.5 % of nonpregnant

women misusing opioids receiving treatment in this study. These numbers cannot be ignored. In conjunction to increasing access to treatment and enhancing clinical guidelines it is imperative to address the issue of perceived need for treatment. Studies have shown those who recognize having a problem with substance use and perceive a need for treatment are more likely to seek help than those who do not (Ali, Teich, & Mutter, (2015); Choi, DiNitto, & Marti, 2014; & Grella, Gil-Rivas, & Cooper, 2009). Resources exist to assist healthcare providers assist individuals with low motivation and lack of perceived need for substance use treatment (SAMSHA , 2019). As a start, emphasis on motivational interviewing techniques and understanding of the Transtheoretical Model would be worthwhile in primary care and obstetrical settings.

Policy Recommendations

To outpace the opioid epidemic, it is imperative efforts continue to focus on comprehensive public health-oriented policies, for example increasing funding for prevention, treatment, and recovery services instead of increasing funding that penalizes and criminalizes pregnant women with substance use disorders. Setting the tone with the correct language; referring to the opioid crisis as a "public-health emergency was a move in the right direction (Hirschfeld Davis, 2017). Secondly, supporting funding to states in Opioid State Targeted Response Grants to address prevention, treatment, and recovery services signals the importance and provides a foundation for much needed infrastructure. Detoxification alone is insufficient (Sharma, Bruner, Barnett, & Fishman, 2016). The US Department of Health and Human Services (2018) released $485 million over a 2-year period as a measure of the 21st Century CURES ACT, however building sustainable

infrastructure to meet the needs of this population is estimated to take longer and may need additional funding.

Remove Provider Barriers

Comprehensive treatment for opioid addiction also takes into consideration policy that continues to remove barriers for physicians, nurse practitioners, and physician assistants, to treat and prescribe MAT (Kolodny et al., 2015). Currently qualified providers can apply for a waiver through the SAMSHA that permits them to prescribe medications up to 275 individuals with opioid use disorders (SAMSHA, 2018). Policy to expand education on the treatment and prevention of substance use disorders in medical and nursing training, as well as, education to the public are necessary steps to increase access and prevent death due to opioid overdose (Christie et al., 2017).

Decriminalization

The final recommendation to curb the opioid crisis is advocating for stronger drug policy that decriminalizes individuals with opioid use disorders. Supporting this premise is the American Academy of Nursing (AAN). In 2019, the AAN called to end criminal prosecution and punitive civil actions to pregnant and parenting women based solely on their substance use disorder. Countries like Portugal have established decreased drug related deaths, cases of HIV and Hepatitis B & C (Greenwald, 2009). According to Drug Policy Alliance (2017) the US has made some movement towards decriminalizing, such as reducing marijuana possession to a misdemeanor and or legalizing marijuana in some states; however stronger efforts are needed. Based on an analysis of 1,186,810 national arrests for drug law violations in 2016: 84.7% (1,004,762) were for possession of a controlled substance. Only 15.3% (182,048) were for the sale or manufacturing of a drug

(Drug War Facts, 2018). Moreover, "there are currently 500,000 persons imprisoned in the U.S. for violating drug laws; this is more than all the prisoners in all the Western European nations combined, the US federal prison population has grown by 900% since the Controlled Substances Act was enacted in 1970 (Criminal Justice Policy Foundation, nd.). According to the Guttmacher Institute (2020), 23 states and the District of Columbia claim substance use during pregnancy to be child abuse under civil child-welfare statutes, and 3 consider it grounds for civil commitment. Of promise, 19 states have either created or funded drug treatment programs specifically targeted to pregnant women, and 17 states and the District of Columbia provide pregnant women priority access to state-funded drug treatment programs. Individuals with substance use disorders need treatment and rehabilitation not incarceration.

Conclusion and Implications for Nursing

For women struggling with addiction, the toughest step toward recovery is the very first one; recognizing that you have a problem and deciding to make a change. MAT is clinically proven to assist pregnant women recovery from their OUD and reduce maternal and fetal complications (Jones et al., 2010). Sadly, over 95% of the pregnant and nonpregnant women in this study identified as misusing opioids did not perceive they had a problem. These findings sound the alarm for clinicians to act. It is our responsibility to equally focus efforts on understanding the construct of perceived need and help seeking behaviors among pregnant women, as well as, deploy known techniques to engage them in recovery.

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Appendix

USD Institutional Review Board Approval

Feb 3, 2020 11:22 AM PST

Loralie Woods
Hahn School of Nursing & Health Science

Re: Exempt - Initial - IRB-2020-205, Barriers and Facilitators to Opioid Use Treatment and Recovery
Services During Pregnancy

Dear Loralie Woods:

The Institutional Review Board has rendered the decision below for IRB-2020-205, Barriers and Facilitators
to Opioid Use Treatment and Recovery Services During Pregnancy .

Decision: No Human Subjects Research

Selected Category:

Findings: None

Research Notes:

Internal Notes:

Note: We send IRB correspondence regarding student research to the faculty advisor, who bears the
ultimate responsibility for the conduct of the research. We request that the faculty advisor share this
correspondence with the student researcher.

The next deadline for submitting project proposals to the Provost's Office for full review is N/A. You may
submit a project proposal for expedited or exempt review at any time.

Dr. Thomas R. Herrinton
Administrator, Institutional Review Board

Office of the Vice President and Provost
Hughes Administration Center, Room 214
5998 Alcalá Park, San Diego, CA 92110-2492
Phone (619) 260-4553 • Fax (619) 260-2210 • www.sandiego.edu