2023-05-01

Mental Illness And Substance Use Disorder (sud) Among Pregnant And Postpartum Women In A Women's Residential Treatment Center In El Paso, Texas

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MENTAL ILLNESS AND SUBSTANCE USE DISORDER (SUD) AMONG PREGNANT AND POSTPARTUM WOMEN IN A WOMEN'S RESIDENTIAL TREATMENT CENTER IN EL PASO, TEXAS

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Dedication

To all the friends, family members, and pets who saw me start this degree but couldn't see me finish. May you all rest in peace and know that your actions and your love, big and small, before your passing helped shape me into the person I am today. To my mentors, who fostered my mind and passion for learning, who led me on this path and taught me that I have something to say. To my parents for always loving me and supporting me in my life pursuits, even when they didn't always understand what I was doing. To everyone who gave me space to work, a late-night coffee, and the encouragement and support that I needed to make it this far.

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by

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THESIS

Presented to the faculty of the Graduate School of

The University of Texas at El Paso

in Partial Fulfillment

of the Requirements

for the Degree of

MASTER OF PUBLIC HEALTH

Department of Public Health

THE UNIVERSITY OF TEXAS AT EL PASO

May 2023

Acknowledgements

I would like to acknowledge and share my deepest gratitude and thanks to Dr. Thenral Mangadu, MD, MPH, PhD for guiding me and supporting me in my graduate studies and making this research possible. Her guidance and wisdom throughout this process has been a profound learning experience for me. Thank you for being a wonderful mentor, advisor, and chair. I would like to thank my committee members, João Ferreira-Pinto, PhD, and Maria Duarte-Gardea, PhD for their continued guidance and support on this master's thesis.

I would like to thank our community partner and, specifically, Ricki Estrada, MA, LCDC, LPC, PSS for providing feedback on this thesis and for providing the critical care needed for PPW with SUD and COD SMI. These services are vital for this unique population, and without these necessary services, this research would not have been possible.

I would like to thank my parents, Joe and Kimberly, my partner, Mark, the rest of my family, and my friends for feeding me, helping me navigate life, and understanding just how busy I have been throughout this program. Your support has helped make my education and this research possible. You have all stood by me through the sacrifices, personal and financial, that I have had to make to progress through this program.

This Research Thesis was developed, using secondary data collected for a project funded under grant number 1H79TI080319 (PI: T Mangadu) from the Substance Abuse and Mental Health Services Administration (SAMHSA). The views, opinions and content of this publication are those of the authors and contributors, and do not necessarily reflect the views, opinions, or policies of CMHS, SAMHSA, or HHS, and should not be construed as such.

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Abstract

Background: Substance use disorders (SUDs) and opioid use disorders (OUDs) are a major public health concern in the United States. SUD/OUDs are often linked to co-occurring physical disorders and serious mental illness (SMI). Stress and trauma are often contributing factors to the development of SUD/OUD and/or co-occurring SMI, which impact pregnant and postpartum women (PPW), who concurrently, may face specific risk factors and barriers to care for these conditions. These risk factors and barriers to care may be exacerbated by Hispanic/Latino identities. Studying social determinants of health based on a social ecological model approach can help increase knowledge about this specific population. This secondary data analysis study utilized data collected for a grant funded intervention (PI: T Mangadu) in 2018. The purpose of this secondary data analysis included 142 women enrolled in the parent study who were part of a women's residential treatment program in the El Paso, TX area between 2018 and 2022. **Objectives**: The purpose of this study was to describe characteristics of a population of PPW with SUD/OUD and/or co-occurring disorder/ SMI enrolled in a women's residential treatment facility in the El Paso, TX area and to assess relationships between trauma and social determinants of health (socioeconomic factors and social and community factors) among the study population. **Hypothesis:** PPW with SUD/OUD and/or co-occurring disorder/ SMI who have experienced trauma are more likely to have children and a higher number of children, more likely to experience housing insecurity, and less likely to have enough money to meet their needs than their counterparts who have not experienced trauma. **Results:** PPW with SUD/OUD and/or co-occurring disorder/ SMI who have experienced trauma are just as likely to have children ($p=.421$) and to have no significant difference in the number of children as those who have not experienced trauma ($p=.446$). PPW with SUD/OUD and/or co-occurring disorder/ SMI who have

experienced trauma are just as likely to have been unhoused in the past 30 days than those who have not experienced trauma (p=.128). PPW with SUD/OUD and/or co-occurring disorder/ SMI who have experienced trauma are just as likely to have enough money to meet their needs (p=.669) and to have no significant difference in total income as those who have not experienced trauma (p=.528). **Conclusions:** Among participants in this study, there were no observed significant relationships between income, housing insecurity, or number of children and experiences of trauma. From the descriptive statistics results we see trends in SUD among the population that can be used to understand SUD intervention needs. Seventy percent of participants experienced trauma, indicating a need for evidence-based practices and trauma-informed care. **Recommendations:** Recommendations include addressing social determinants of health such as providing housing security and income assistance for PPW with SUD and/or co-occurring disorder/ SMI and utilizing trauma-informed care for this population.

Key words: Pregnant and Postpartum Women (PPW); Substance Use Disorder (SUD); Co-occurring disorders; Serious Mental Illness; US-MX Border; Social Determinants of Health; Trauma

Word Count: 454

Introduction

Considering the 20.4 million Americans over the age of 12 in 2019 with a substance use disorder, with high percentages of stimulant and opioid use (50.4% and 46.6% of users respectively in 2019) (NSDUH, 2019), substance use disorder (SUD) & opioid use disorder (OUD) remains a serious public health concern in the United States. The projected $740 billion dollars in annual costs (American Addiction Centers, 2022) related to SUD/OUD substantiate the mass national impact SUD/OUD has on the United States public and highlight the need for further research to address this public health emergency. Exacerbating this concern is the co-occurrence of serious mental illnesses such as depression and post-traumatic stress disorder. Specific stressors can act as risk factors for both SUD/OUDs and/or co-occurring disorder (COD)/ serious mental illness (SMI) (Mahu et al., 2021; Whitesell et al., 2013; Duresso, 2021). Stressors and risk factors can be analyzed using a social ecological approach to understand at what level and in what context these factors contribute to substance use behaviors and subsequent development of SUD/OUD (Bonar et al., 2021; Maina et al., 2021). Trauma, experiences of violence, social pressures, daily stress, discrimination, and stigma are salient risk factors for engaging in substance use (Dworkin et al., 2017; Hruska et al., 2014; Charles et al., 2015). Social determinants of health and barriers to care need to be explored in the context of location and population specific factors for SUD/OUD and/or COD SMI. Policies, including the criminalization of substance use, immigration policy impacting migrant populations and their health care seeking behavior, access to substance use treatment for specific populations, stigma towards substance use, mental illness, and certain medications, and distance to care are examples of social and structural factors that prevent people from seeking treatment for SUD/OUD and/or COD SMI (Jegede et al., 2020; Young et al., 2015). Immigration is also a key policy-level factor

that impacts overall health and healthcare seeking behaviors, including for SUD/OUD, particularly along the US-MX border and among populations with higher rates of migrant or immigrant individuals (Moya and Shedlin, 2008; Lucero et al., 2018).

Pregnant and Postpartum Women (PPW) in the United States are at risk for SUD and/or COD SMI (Renbarger et al., 2020; Le Strat et al., 2011; Dworkin et al., 2017; Kuo et al., 2013). Understanding SUD/OUD and/or COD SMI following a social-ecological approach can shed light on how individual, relational, community, and social factors interact and intersect to increase risk and protective factors for these populations (Bonar et al., 2021; Maina et al., 2021). There is a need to further examine the social determinants of health that are most salient for increased risk of SUD/OUD and/or COD SMI and barriers to care for these outcomes. This may shed light on how SUD/OUD and/or COD SMI are developed by individuals in community and social settings and how they seek treatment and management for these conditions. Of particular importance are how PPW navigate sociocultural and structural barriers to care, including the criminalization of substance use, stigma associated with substance use, and quality of care in addressing the confounding issues associated with these health outcomes (Gruß et al., 2021; Krans et al., 2018; Kuo et al., 2013; Meinhofer et al., 2020; Renbarger et al., 2020).

Highlighting US-MX border ethnic and place-based social determinants of health can provide insight to the unique sociocultural and structural factors contributing to SUD/OUD and/or COD SMI among PPW in the El Paso, TX area. Latinos living in the United States experience a variety of unique issues that impact health outcomes and availability of accessible care (Marsiglia et al., 2011; Cherpitel et al., 2020; Lucero et al., 2018; Borges et al., 2015; Moya and Shedlin, 2008). Latino youth have higher rates of suicidality than their non-Latino peers that may result from SMI caused by social issues like lower socioeconomic status, higher locational

stress, and higher acculturative stress (Canino and Roberts, 2001; Silva and Van Orden, 2018). Suicidality, an indicator of SMI, is also higher among the female Latina population than their male counterparts while the overall Latino population in the United States may be more hesitant to seek care for SMI and/or SUD/OUD than their non-Latino counterparts (Silva and Van Orden, 2018; Marsiglia et al., 2011). El Paso, TX provides an important venue to understanding SUD/OUD and/or COD SMI among PPW because of the high population density of majority Mexican-American Latinos in the area, the variety of immigration statuses and histories in the area, and the combination of urbanized and rural areas relatively close to each other. The US-MX border location of El Paso, TX also merits to conduct an important study based on findings from earlier research that indicates substance use behavior is higher along the US-MX border, with in-city variance of alcohol consumption in California being higher at closer proximity to the border (Caetano et al., 2021). A study between Texas cities on and off the US-MX border also indicated higher substance use in the border city of Laredo in comparison to San Antonio, which is off the border (Cherpitel et al., 2020). This study did not account for in-city variance, only between cities. Both studies indicate that proximity to the US-MX Border has an association with substance use behavior.

Prior research on PPW and mental illness and SUD show that there are specific individual risk factors and barriers to care for these conditions associated with being pregnant (Renbarger et al., 2020; Dworkin, et al., 2017; Meinhofer et al., 2020; Kuo et al., 2013). A lack of integrated care that addresses specific social determinants of health, including socioeconomic status related issues like transportation and childcare, can be barriers to treatment for this population (Hodgins et al., 2019; Eisen et al., 2000). PPW Programs sponsored by the Substance Abuse and Mental Health Services Administration (SAMHSA) aim to provide comprehensive

services and trauma-informed care that PPW with SUD and COD SMI desperately need. Studies have shown that Latina women who are pregnant or are in a postpartum period may have a lower prevalence of SMI, but those that do have SMI are underserved (Coleman-Cowger, 2012). The availability of PPW programs is lower in Texas than in other parts of the United States (Meinhofer et al., 2020). Thus, understanding the specific social determinants of health and barriers to care faced by PPW and the implications of the same for SUD/OUD and/or COD SMI in the El Paso, Texas region may shed light on the salient factors impacting minority women and, consequently, inform public health interventions for this priority population.

Background and Significance

Understanding the relationship between SUD/OUD and/or COD SMI is crucially important, particularly with factors along the social ecological model that account for substance use initiation and continued use, COD SMI, and help-seeking behavior with an emphasis on social determinants of health that shape these health outcomes (Bonar et al., 2021; Maina et al., 2021).

Individual -level factors like coping, trauma, and stress are key components in understanding the drivers behind SUD (Whitesell et al., 2013; Duresso, 2021). There are risk factors for substance use based on relational factors, community factors, and social factors (Duresso, 2021; Charles et al., 2015; Hruska, et al., 2014; Whitesell et al., 2013; Young et al., 2015; Jegede et al., 2020). Social determinants of health are important to consider in relation to the risk factors for SUD/OUD and/or COD SMI. Social norms that stigmatize these conditions and prevent people from seeking help are underlying causes behind low access to and utilization of available resources (Young et al., 2015; Borges et al., 2015; Jegede et al., 2020; Henderson and Dressler, 2017). Further consideration for structural barriers including transportation, cost, insurance status, and education level that can prevent people from seeking care while simultaneously exacerbating SUD is also important (Young et al., 2015). These risk factors are also associated with SMI, which can be COD with SUD/OUD and are often risk factors for each other.

It is important to understand the role of specific stressors including violence, social problems, and work-related stress in patterns of substance use behavior and the development of SUD/OUD and/or COD SMI, including stressors that are concurrently social determinants of health (Jegede et al., 2020; Cherpitel et al., 2020). Race/ethnicity, risk environments, housing

insecurity, poverty/financial insecurity, perceived barriers to care, and stigma (Jegede et al., 2020) are key social determinants of health to consider among minority populations along the US-MX Border. The unique location of the US-MX border may shape social determinants of health like poverty and unemployment, poor health, and sociocultural and linguistic barriers to care due to the complex composition of border-dwelling communities (Cherpitel et al., 2020; Lucero et al., 2018; Moya and Shedlin, 2008). Understanding what specific drivers, including poorer overall health, economic stress, and cultural stigma among US-MX border populations, immigration history and status, and experiences of discrimination, is a crucial next step to advancing the literature in this area.

Social determinants of health including social stigma and policy can be barriers to people living with SUD/OUD and/or COD SMI. Policies that impact Latino populations in the United States include the criminalization of immigration status (Moya and Shedlin, 2008; Lucero et al., 2018). Paired with the criminalization of substance use, these policies act as a deterrent for people seeking medical care and substance use treatment, specifically (Moya and Shedlin, 2008; Lucero et al., 2018). With the known co-occurrence of SMI and substance use behavior, these policies also act as deterrents for people seeking mental health services. Affordability and funding are also important factors in serving individuals along the US-MX border (Moya and Shedlin, 2008). In an area that is impacted by health disparities, the location of health services in relation to the client's home and out of pocket cost of services may be significant barriers to care (Moya and Shedlin, 2008). With lower cost from Medicaid/CHIP funding not being an option for people who are undocumented (Moya and Shedlin, 2008), the US-MX border region faces unique challenges in getting care to the people who need it while considering the variety of immigration statuses present in the region.

Studies suggest that place-based understanding of the incidence of SUD/OUD and COD SMI are important, particularly in understanding access to health services and substance use treatment (Borges et al., 2015; Wallisch and Spence; 2006; Marks et al., 2021; Brady et al., 2022). Socioeconomic status and immigration status are important considerations for overall health and healthcare seeking behavior along the US-MX border. While there is literature on substance use along the US-MX Border and substance use pertaining to specific identities, there needs to be more place-based research along the US-MX border in relation to specific risk factors, social determinants of health, and barriers to care for SUD/OUD and/or COD SMI in minority populations living in underserved areas.

SUD & OUD Contexts and Epidemiology

According to SAMHSA, substance use disorder is defined as "recurrent use of alcohol and/or drugs causing clinically significant impairment, including health problems, disability, and failure to meet major responsibilities at work, school, or home" (SAMHSA, 2021). SUD can occur with any substance, to include alcohol, marijuana, opioids, stimulants, depressants, psychoactive agents, hallucinogens, inhalants, methamphetamine, and prescription drugs. Substances that indicate a stronger propensity of development into SUD include stimulants, with a SUD rate at 50.4% of users and opioids with a SUD rate at 46.6% of users (Gayman et al., 2014). This indicates the importance of addressing substance use overall, but also understanding the factors associated with higher propensity of SUD across individual substances.

SUDs are prevalent in the general population. According to the National Survey on Drug Use and Health (NSDUH) from SAMHSA, in 2019 20.4 million people aged 12 or older in the United States had a SUD in the past year (NSDUH, 2019). The American Addiction Centers report that the annual cost for American society relating to substance use and SUD exceeds $740

billion (American Addiction Centers, 2022). A 2018 study says of SUD "the United States is currently in the midst of one of the largest public health crises in recent history" (Ashford et al., 2018).

SUD & OUD Prevalence and Risk

Substance use and SUD/OUD are still prevalent issues in the United States. According to the NSDUH 2019 annual report, a nationally representative survey with participants aged 12 and older, 60.1 percent of people in the United States had used at least one substance in the past month. Substance use rates for alcohol, tobacco, and marijuana had the highest rates of use. All estimated SUDs for the general United States population were found to be at 7.4% of the total population, or about 20.4 million people (NSDUH, 2019). Alcohol Use Disorders were estimated to be found in 5.3% of the overall population aged 12 and older (n=14.5 million) in 2019.

Illicit drug use disorders, which account for marijuana, cocaine, heroin, hallucinogens, inhalants, methamphetamine, and misuse of prescription medications were estimated to be found in 3% of the overall population aged 12 and older (n=8.3 million) (NSDUH, 2019). According to the NSDUH (2019) data, the breakdown for each substance under illicit SUD are as follows: Marijuana use disorders were estimated to be 1.8% of the population (n=4.8 million) in 2019 followed by opioid use disorders at 0.6% (n=1.6 million), prescription pain reliever use disorders at 0.5% (n=1.4 million), cocaine use disorders and methamphetamine use disorders at 0.4% (n=1 million) each, prescription tranquilizer or sedative use disorders at 0.2% (n=681,000), prescription stimulant use disorders at 0.2% (n=558,000), and heroin use disorders at 0.2% (n=438,000) (NSDUH, 2019). According to the National Institute on Drug Abuse (NIDA), 2019 saw 70,000 deaths in the United States from drug-involved overdose, part of a generally steady rise in overdose deaths in the United States over the past 2 decades.

According to the Center for Behavioral Health Statistics and Quality report "Racial/Ethnic Differences in Substance Use, Substance Use Disorders, and Substance Use Treatment Utilization among People Aged 12 or Older 2015-2019" (2021) , past year alcohol use disorder in the United States was highest for American Indian or Alaska Native populations (8.3%), followed by White populations (5.8%), Hispanic populations (5.2%), Black populations (4.8%), and Asian populations (3.3%). Estimates for past year SUD were highest among Native Americans or Alaska Native populations (11.2%), followed by White populations (7.8%), Black and Hispanic populations (7.1% each), and Asian populations (4.1%) (Center for Behavioral Health Statistics and Quality, 2021).

SUD and COD SMI

SAMHSA (2021) defines SMI as "a diagnosable mental, behavior, or emotional disorder that causes serious functional impairment that substantially interferes with or limits one or more major life activities." A common risk factor for SMI includes stress. Folkman et al. (1987) indicated that daily hassles were more strongly related to stress than major life events and stress exposure is also associated with behavioral health problems with greater exposure to social stressors increasing this risk (Gayman et al., 2014). These stressors and behavioral health problems can also be associated with substance use behavior. "An estimated 45% of individuals with alcohol use disorders and 72% of individuals with drug use disorders had at least one co-occurring psychiatric disorder" (Brady and Sinha, 2005). There is a bidirectional relationship between mental health disorders and SUD; each being a risk factor for the other (Brady and Sinha, 2005). Depression can be comorbid with the abuse of specific substances like nicotine, alcohol, and illicit drugs (Brady and Sinha, 2005). The neurobiological effects of depression and SUD also see overlap, which could be a factor contributing to their comorbidity (Brady and

Sinha, 2005). Individuals with SUD have shown difficulty managing stressful situations and emotional distress (Brady and Sinha, 2005). For example, smoking may have anti-depressant effects that could explain high rates of smoking among people with major depression (Brady and Sinha, 2005).

Post-traumatic stress disorder (PTSD) and substance use comorbidity follow similar neurobiological pathways and each can be risk factors for the other (Brady and Sinha, 2005). Chronic substance use can increase anxiety levels that could develop into PTSD while people with PTSD may turn to substance use as a form of coping and symptom management that has potential to become a SUD (Brady and Sinha, 2005). Noradrenergic system abnormalities that occur in PTSD are similar to the activity seen in alcohol and opioid withdrawal (Brady and Sinha, 2005). There is a higher propensity for relapse among people with SUD and co-occurring PTSD (Ouimette et al., 2007). Patients that have comorbid PTSD and SUD are more likely to relapse and have their relapses be more severe than patients with SUD that do not have PTSD (van Dam et al., 2013). This indicates a strong relationship between SMI and SUD.

For PPW, SUD/OUD and/or COD mental illness poses a public health concern for both mother and child (Chapman and Wu, 2013). Depression, specifically, and substance use can increase risk for prenatal outcomes including abruption, preeclampsia, and suicide (Kuo et al., 2013). Psychiatric disorders are linked to poor maternal health and adverse outcomes to their children in gestation and childhood (Coleman-Cowger, 2012). PPW with major depressive episodes also showed associations with other mental health outcomes including anxiety disorders and substance use (Le Strat et al., 2011). PPW with depression may have higher likelihood of substance use, particularly women with postpartum depression, a subset of major depressive disorder (Chapman and Wu, 2013). Substance use while pregnant can also increase postnatal and

perinatal risks including child developmental and behavioral issues (Kuo et al., 2013), stillbirth, and congenital abnormalities (Renbarger et al., 2020). Additional health risks from substance use include increased likelihood of abuse, higher risk of bloodborne illness like HIV or hepatitis, and postpartum depression (Wilder et al., 2015). The associated risks of substance use for women and their children, particularly from substance use while pregnant, indicate the importance of studying substance use and related health outcomes in PPW.

Statistics/ Data related to SUD/OUD and/or COD SMI

The NSDUH 2019 report from SAMHSA defines major depressive episodes as "one period of 2 weeks or longer in the past year when for most of the day nearly every day, they felt depressed or lost interest or pleasure in daily activities; and they also had problems with sleeping, eating, energy, concentration, self-worth, or having recurrent thoughts of death or recurrent suicidal ideation" (NSDUH, 2019). According to the study, adolescents (aged 12-17 years) who experienced major depressive episodes in 2019 were estimated to be 15.7 percent of the general population (n=3.8 million) and depressive episodes with severe impairment estimated to be about 11.1% (n=2.7 million) (NSDUH, 2019). The estimation of adults aged 18 years or older who experienced major depressive episodes in the United States in 2019 was estimated at 7.8% (n=19.4 million) of the general population and major depressive episodes with severe impairment estimated at 5.3% (n=13.1 million) (NSDUH, 2019). SMI among adults aged 18 and older was estimated to be 5.2% (n=31.1 million) of the overall population (NSDUH, 2019).

Co-occurring major depressive episodes and SUD/OUD among adolescents were estimated at 1.7% (n=397,000) of the overall population in 2019 and substance use was more common among adolescents who had a past year major depressive episode with marijuana being the most common (31.9% of adolescents with a past year major depressive episode) followed by opioids

(24.6%), and alcohol (8.9%) (NSDUH, 2019). The percentage of adults with SUD/OUD and/or COD any mental illness in the United States in 2019 was estimated to be 3.8% of the overall population (n=9.5 million) (NSDUH, 2019). The estimated co-occurrence of SMI and SUD/OUD was estimated at 1.4% of the overall population (n=9.6 million) (NSDUH, 2019). NSDUH data indicates that 49.4% of adults with SMI and 38.8% of people with any mental illness were more likely to engage in substance use compared to people with no mental illness (16.6%) (NSDUH, 2019).

Data from the NSDUH from 2018 indicated 11.6% of pregnant women in the United States used tobacco products, 9.9% used alcohol, and 5.4% used illicit substances (Renbarger et al., 2020). Opioid use during pregnancy in the United States rose in prevalence from 1.5 per 1,000 hospital deliveries to 6.5 per 1,000 between 1999 and 2014 (Renbarger et al., 2020) with children born with neonatal abstinence syndrome increasing from 1.2 per 1,000 births to 5.8 per 1,000 between 2000 to 2012. There was a 33% increase in hospitalizations of pregnant women related to substance use between 2006 and 2012 (Renbarger et al., 2020). Prevalence of major depressive disorder in PPW ranged from 5.5% to 31%, respectively, indicating a major public health issue relating to mental health during pregnancy (Le Strat et al., 2011). These statistics underlie the critical importance of understanding SUD/OUDs and their contributing or confounding factors in PPW in the United States.

Risk Factors for SUD/OUD and COD SMI

Like any health outcome, SUD/OUD and/or COD SMI are rife with a variety of specific risk factors that can increase their incidence among the population. A New Zealand study found that substance use and co-occurring psychosis are mutually influential, with dose-response relationships between substances used and higher rates of psychosis (Lappin, 2021). Psychosis

also influences substance use behaviors indicating coping and self-medication behavior among people with SMI (Lappin, 2021). Following the social ecological model of understanding behaviors, we know that there are individual, organizational, community, and societal factors that can contribute to substance use and the development of SUD/OUD (Bonar et al., 2021; Maina et al., 2021). These factors intersect and influence one another in a variety of ways. For example, individuals with a history of SUD/OUD indicate higher exposure to stressors during childhood among their family, in school, and with peers (Charles et al., 2015). This indicates individual factors (personal stressors), relational and social factors (family and peers), and community factors (school) contribute to the development of SUD and COD SMI. Understanding how each of these factors relate to each other is necessary for understanding the full scope of these conditions. These factors are also importantly shaped by location and identity, which have specific stressors associated with each that can be mapped into the social ecological model (Young et al., 2015; Lo et al., 2012; Jegede et al., 2020; Caetano et al., 2021; Brockie et al., 2015).

Stress and Coping as Factors Shaping SUD and Mental Illness

Stress is defined by the American Psychological Association (2023) as "a normal reaction to everyday pressures but can become unhealthy when it upsets your day-to-day functioning. Stress involves changes affecting nearly every system of the body, influencing how people feel and behave. By causing mind–body changes, stress contributes directly to psychological and physiological disorder and disease and affects mental and physical health, reducing quality of life" (APA, 2023). Stress is triggered by events called "stressors" and can be acute or chronic. In acute stress, the stressors arise and dissipate quickly (Lazarus, 2006). Chronic stress lasts for a longer period and can be attributed to different life and social factors (Lazarus, 2006). The

process of perceiving and reacting to stress is grounded in emotional responses and coping mechanisms (Lazarus, 2006). The way in which a person reacts to, or copes with, these emotional responses are based on a person's beliefs and personal resources (Lazarus, 2006). Resources can include individual, relational, and structural components, for example: intelligence, social skills, health, education, socioeconomic status, and support systems (Lazarus, 2006). Lazarus and Folkman (1984) defined coping as "constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person." The physiological and behavioral motivations behind substance use, for example, are important to understand in a coping context.

Lazarus (2006) indicates stress as a natural part of life and indicates that coping is more important for overall well-being than stress itself. Stress is related to social mobility in that people with effective coping mechanisms are more likely to go beyond their perceived limits (Lazarus, 2006). Research by Wills et al. (2001) also indicate the role of time perspective on stress and coping. Through stress literature, we see a high incidence of mental health disorder outcomes among adolescents who experience high levels of stressful events. This further indicates the relationship between stress, coping, and SUD, as we know these to be comorbid with SMI.

Social stress theory indicates that stress can be experienced differently based on social status (Meyer et al., 2008). Stress may be based on social status, with structural social features acting as risk factors for stress and influencing coping resources (Meyer et al., 2008). Structural and social stressors include socioeconomic status, ethnic identity, and other factors that also serve as social determinants of health (Meyer et al., 2008). These stressors, including employment opportunity, income, and access to services, are components of social exclusion that

differentially impact people of minority or low-income statuses (Meyer et al., 2008). Experiential stress can include daily stressors that are more applicable to the general public, while specific stressors may include more unique experiences, like racism, that can only be applied to minority populations and not the general public (Meyer et al., 2008). Following the social stress theory and the social ecological model approach, it is important to understand how individuals experience and manage stress, which stressors are salient for minority populations, and how they impact health outcomes for SMI diagnoses and the occurrence of substance use behavior and disorders as a result of coping with differences in stress.

Social support has been identified as a crucial protective factor for stress management, with loneliness influencing higher stress responses (Taylor and Stanton, 2007). Avoidance oriented coping, such as trying to ignore a problem, can lead to higher rates of substance use and higher stress-related emotions (Taylor and Stanton, 2007). Approach oriented coping like relaxation and exercise can increase physical and mental health (Taylor and Stanton, 2007). When someone is less likely to have resources for positive coping approaches or faces a socially stigmatized condition and feels they cannot seek help, they may be more likely to experience loneliness and engage in avoidant coping (Taylor and Stanton, 2007) that can exacerbate SUD and SMI and related help-seeking behavior.

Research indicates that people with SMI lack coping resources for stress management (Taylor and Stanton, 2007). Stress and coping also have implications for substance use and SUD. Stressors that include experiences of violence, social problems, and work-related stress are prevalent among people who use substances (Charles et al., 2015). Experiencing more stress has also been linked to using substances other than alcohol with cigarettes being the most common (Linden-Carmichael et al., 2021). Identifying specific stressors like individual histories of abuse,

social and work-related stressors, availability of services, experiences of discrimination, and structural factors like educational attainment and socioeconomic status can be done using the social ecological model with specific linkages to substance use and mental health outcomes.

Social Ecological Model Domains shaping risk for SUD/OUD and/or COD SMI

The social ecological model looks at different intersecting factors that influence a person's behavior and health across four levels: individual, relational, community, and social (Maina et al., 2021; Bonar et al., 2021). Maina et al. (2021) indicate the importance of using a social ecological model to understand risk for opioid use and treatment outcomes. Family settings and community resources are two aspects of the social ecological model that were particularly important in identifying risk factors for substance use and treatment outcomes (Maina et al., 2021). Factors along the social ecological model can also influence health disparities along social lines, including socioeconomic status, race/ethnicity, and gender (Meyer et al., 2008).

PPW have a variety of intersecting risk factors across the ecological model from individual to systemic social levels that increase specific risks for SUD/OUD and COD SMI (Meinhofer et al., 2020; Forray and Foster, 2015; Mattocks et al., 2017; Hodgins et al., 2019). For example, pregnant women with OUD may have increased likelihood for polysubstance use, histories of abuse, lack of social support, and food and housing insecurity (Meinhofer et al., 2020; Forray and Foster, 2015). Outcomes associated with substance use include higher propensity to experience violence, HIV or hepatitis, or miscarriage (Wilder et al., 2015). Substance Abuse, Violence, and AIDS exist in a syndemic with intersecting risk factors that include poverty, sexual violence, SMI like depression, and relationship factors (Dévieux et al., 2016). Food and housing insecurity, a risk factor associated with substance use and SMI, also

increase rates of transactional sex in pregnant women with SUD/OUD; these women are also often disempowered to negotiate safer sex practices, increasing the risk of HIV (Dévieux et al., 2016). Families with low income or who are economically marginalized may be more likely to engage in substance use to cope with financial strain, health concerns, and limited support systems (Oh et al., 2018). Postpartum women with OUD may be at increased risk for psychiatric illness, intimate partner violence, social adversity, and substance use relapse (Proulx and Fantasia, 2020). Women with SUD are also likely to experience inadequate prenatal care, poverty, chronic medical problems, unemployment, disability, and to be single (Forray and Foster, 2015).

Figure 1

Social Ecological Model Domains Shaping SUD/OUD and/or COD SMI

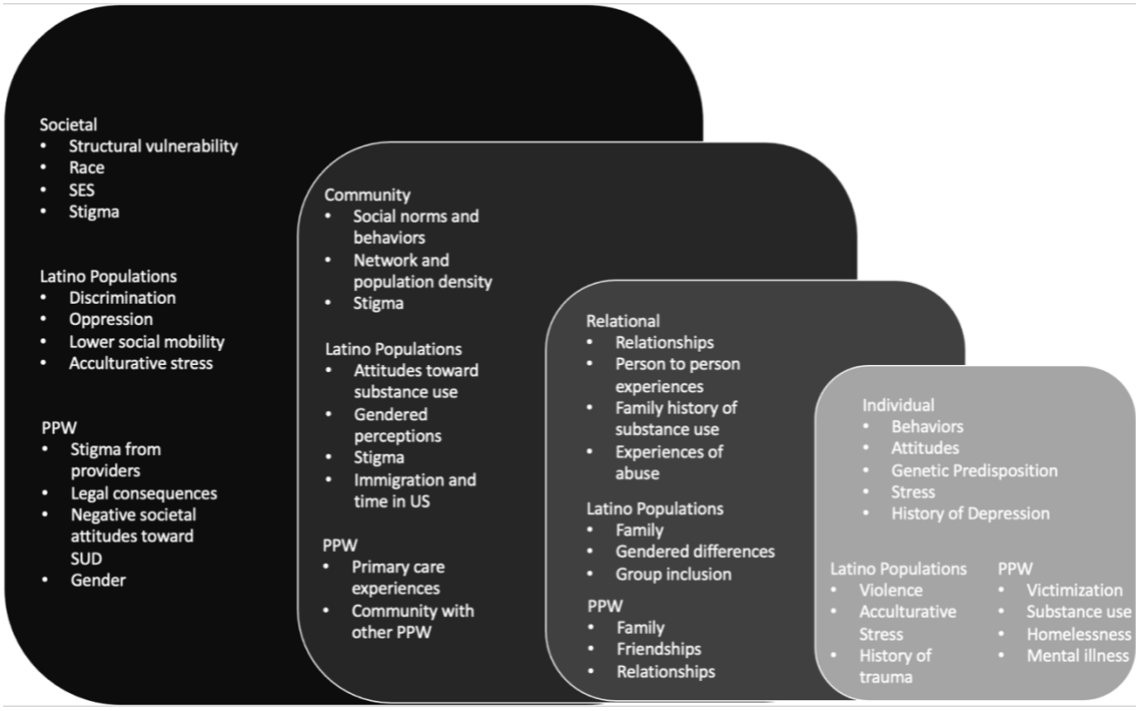

Figure 1 shows selected factors associated with SUD/OUD and/or COD SMI across the four domains of the social ecological model. Each domain was broken down to also show factors

that are related to these outcomes in the general US population, Latino populations in the US, and PPW populations in the US. As shown in Figure 1, certain factors exist in multiple domains across the model or are linked to other factors in the same or another domain. For example, social norms and behaviors that exist at the community level can influence or mirror behaviors that exist at the individual level and impact health outcomes (Bonar et al., 2021). Acculturative stress exists at the societal level and individual level that can impact Latino mental health outcomes (Garcini et al., 2017). Stigmatization of substance use exists at societal, community, and relational levels within the general population, Latino populations, and towards PPW populations that may impact help seeking behavior among PPW with SUD/OUD and/or COD SMI (Young et al., 2015; Borges et al., 2015; Jegede et al., 2020; Henderson and Dressler, 2017). Gender differences in acceptability of substance use among Latino populations at community and relational levels may also impact help seeking behavior among Latina PPW with SUD/OUD and/or COD SMI (Agoff et al., 2021). Discrimination and oppression at the societal level are related to experiences of trauma and violence at the individual level and may also contribute to mental health and substance use outcomes among minoritized populations (Marsiglia et al., 2011). Considerations for factors in each domain of the Social Ecological Model are important in understanding the full context of SUD/OUD and/or COD SMI among Latino and PPW populations in the US.

Individual-level risk factors for SUD/OUD and/or COD SMI. Individual risk factors for SUD/OUD and/or COD SMI include individual factors that contribute to the development of a SUD/OUD (Maina et al., 2021; Bonar et al., 2021). Coping with depression was among the most common motivations for substance use, particularly for opioids, cannabis, and tranquilizers (Mahu et al., 2021). This relates to the physiological processes associated with dopamine and the

reward systems in the brain. SUD/OUDs increase the release of dopamine in humans, which, in turn, drives the repeated behavior of substance use that leads to SUD/OUD (Whitesell et al., 2013; Duresso, 2021). These processes contribute to both psychiatric disorders and SUD/OUD. Research indicates that a combination of genetic and environmental factors may contribute to substance use. For example, in a twin study conducted by Azimi and Connolly (2022), it was found that "propensity for marijuana use after experiencing child maltreatment may be more heavily influenced by biological susceptibilities correlated with both maltreatment and risk of internalizing problems, such as anxiety and depression." Substance use may also be passed down biologically with the risk factor exacerbated by environmental risks. Azimi and Connolly (2022) also found that children with parents who engaged in substance use and also experienced maltreatment may have increased risk of substance use later in life. The social influence of parents on children was also noted in Bonar et al. (2021) who state that parental substance use was positively corresponded with feelings of loneliness in youth.

Cognitive development and attention deficit hyperactivity disorder (ADHD) (Whitesell et al., 2013; Brady and Sinha, 2005) are other psychiatric issues that have a relationship with SUD/OUD. The development of both psychiatric disorders and SUD/OUD includes high levels of stress in adolescence (Charles et al., 2015). There are also individual motivations that contribute to substance use behaviors. Expansion and enhancement motives were more strongly tied to cannabis, stimulant, and opioid use, while coping with anxiety and depression was tied to marijuana and opioids (Mahu et al., 2021). Furthermore, adolescents who were more concerned with the future were less likely to engage in substance use behaviors, while adolescents who were more concerned with the present were more likely to engage in risky behaviors overall, including substance use (Wills et al., 2001). A Norwegian study found that higher self-esteem

and a stronger sense of coherence, or the ability to cope with daily stressors, were protective factors against substance use across substances (Bøhle et al., 2021). Brady et al. (2022) indicate that male youth are more likely to engage in daily substance use and that their substance use is a result of distress and is used as a coping mechanism. Agoff et al. (2021) highlighted gender differences in substance use behavior among Mexican youth in Mexico. Women in the study described coping with family problems, being less shy, and feeling more attractive as motivators behind cannabis use while men indicated coping with work/school stress, lessening aggressiveness, and peer group inclusion as their motivators (Agoff et al., 2021).

SUD/OUD and/or COD SMI can also contribute to stress that exacerbates substance use (Hruska et al., 2014; Ouimette et al., 2007). People living with SUD/OUD and who are in treatment also often meet the criteria for PTSD (Hruska et al., 2014). PTSD and coping with onset of PTSD symptoms are important factors contributing to substance use, particularly in relation to interpersonal factors and emotional stimuli. In a 2007 study, participants with PTSD and SUD/OUD were more likely to engage in substance use behaviors as a means to cope with symptoms of depression resulting from interpersonal interactions (Ouimette et al., 2007). PTSD can also act as a barrier to SUD/OUD treatment due to low perceptions of self-efficacy and because of the stress-relieving aspects of substance use like smoking (Ouimette et al., 2007; Hruska et al., 2014). Addressing individual factors is only one piece of the puzzle in understanding the occurrence of SUD/OUD, SMI, and their co-occurrence.

Individual-level Risk Factors for Latino Mental Health Outcomes. For undocumented immigrants, there may be higher exposure to risk factors, particularly violence (Garcini et al., 2017). These intersect with intrapersonal and interpersonal factors like acculturative stress and shifting identity as part of the immigrant experience (Garcini et al., 2017). These complex

individual experiences can increase the risk for mental health disorders and can add to the stress of children or family members of undocumented immigrants (Garcini et al., 2017). In a 2017 study of undocumented Mexican migrants, 21.6% of participants met criteria for a mental health disorder with the highest incidence being major depressive disorder; many participants reported high experiences of trauma (Garcini et al., 2017). This highlights the role of immigration status in higher rates of SMI.

At the turn of the century, Latino youth had the highest rates of suicide attempts and to have made a suicide plan (Canino and Roberts, 2001). Over the past decade, suicidality among Hispanic populations has increased and may be a result of acculturative stress, even in United States-born populations (Silva and Van Orden, 2018). Suicidality exists as an individual behavioral factor but may have cultural underpinnings at higher levels of the social ecological model; of particular importance are the manifestations and presentation of depressive symptoms across cultures. In 2015, suicide was the 11th leading cause of death for Latino populations, though still lower than other populations (Silva and Van Orden, 2018). Despite being at lower risk for suicide as a result of depression, the fact that these SMIs are increasing is of particular importance to SUD/OUD and/or COD SMI among Latino populations.

Individual-level Risk Factors for PPW SUD/OUD and SMI. PPW with SUD/OUD reported high-severity victimization in the past year, engagement with the criminal justice system, prior history of substance use, homelessness or housing insecurity, and co-occurring mental disorders (Coleman-Cowger, 2012; Bray et al. 2022; Meinhofer et al., 2020). A history of depression and major life events were also indicated as risk factors for depression during pregnancy with depressed PPW more likely to engage in substance use behavior than women without depression (Le Stat et al., 2011). Pregnancy itself may increase psychological and

physiological stress that increase the likelihood of both substance use and depression (Kuo et al., 2013). Exposure to trauma has a significant relationship with both PTSD and substance use behavior (Dworkin et al., 2017). Among PPW who have PTSD, substance use may create clinical problems during pregnancy and can exacerbate substance use behavior (Dworkin et al., 2017). Depression and anxiety disorders in pregnant women can cause preterm delivery (Salameh et al., 2019). Pregnant women with major depressive episodes were likely to be younger, single, have experienced trauma within the past year, or have experienced pregnancy complications (Le Strat et al., 2011). Coleman-Cowger (2011) indicates that substance use during pregnancy may be indicative of mental health disorders. One study indicated that more than half of pregnant women with mental health outcomes or SUD/OUD had past-year psychological distress (Salameh and Hall., 2019). Past year anxiety or depression can predict substance use during pregnancy (Salameh, et al., 2019). Women who smoked during second and third trimesters were more likely to exhibit symptoms of depression and stress (Forray and Foster, 2015).

Relational-level risk factors for SUD/OUD and/or COD SMI. Relational risk factors for SUD/OUD and/or COD SMI include the relationships and person-to-person experiences that influence behavior (Whitesell et al., 2013). These include factors such as the family context a person is raised in and social interactions with peers. A family history of substance use might increase the risk of substance use initiation and the subsequent development of SUD. Older immediate family members (parents or older siblings) who use substances and poor social skills are risk factors for SUD (Duresso, 2021) and youth with a family history of SUD/OUD are also more likely to develop SUD/OUD themselves (Charles et al., 2015). Trauma based in interpersonal interactions like abuse are also risk factors for developing SUD/OUD. Physical and

sexual abuse, emotional abuse, and neglect are important relational risk factors in SUD/OUD development (Hruska et al., 2014). A 2014 study indicated 78.4% of participants experienced one or more interpersonal traumas including physical and sexual abuse (Hruska et al., 2014). Interpersonal experiences, including traumatic experiences, have a strong link to SUD/OUD and SMI (Hruska et al., 2014). Families also consistently serve as part of strong emotional support networks that are key to recovery (Markowski et al., 2021). Among populations where resources for substance use treatment and care are limited, family networks or other close knit support networks that individuals can engage in have been instrumental in substance use recovery efforts (Markowski et al., 2021).

Group behaviors and group acceptance are important considerations for social factors contributing to SUD/OUD (Whitesell et al., 201e; Brady and Sinha, 2005; Bonar et al., 2021; Williams and Nida, 2011; Charles et al., 2015). Bullying is a significant traumatic experience that has an associated risk for SUD/OUD (Whitesell et al., 2013; Brady and Sinha, 2005). Social relationships in group contexts impacting SUD/OUD include deviant peer relationships, gang affiliation, considerations of popularity, and peer pressure (Whitesell et al., 2013; Brady and Sinha, 2005). Loneliness is a contributing factor to substance use among youth. Bonar et al. (2021) found that negative peer influences (i.e., deviant peer relationships) were positively associated with feelings of loneliness, and that loneliness was associated with higher propensity to engage in substance use behavior. Williams and Nida (2011) describe ostracism as having an immediate physiological response that can trigger the need for coping. The fear of ostracism as an impetus for people to conform to group behaviors like substance use in order to prevent themselves from being perceived as different and subsequently ostracized (Williams and Nida, 2011). Experiences of violence, social problems, and work-related stress can also contribute to

substance use and SUD/OUD with substance use behaviors acting as a coping mechanism to deal with these interpersonal stressors (Charles et al., 2015). Using substances as a coping mechanism and as a social activity can exacerbate the incidence of SUD/OUD (Charles et al., 2015).

Relational-level Risk and Protective Factors for Latino Substance Use. Agoff et al. (2021) indicate family as a strong protective factor specifically for Mexican women who use cannabis, with families engaging in more monitoring of female activities and women feeling more familial pressure to act in certain ways. In a study on cannabis use in Mexico, women reported self-medication as a motivator for cannabis use, while men indicated the appeal of the cannabis subculture and inclusion in that social group as a motivator (Agoff et al., 2021). Hopelessness, or negative expectancy, can be protected against through familial support, particularly among Latino communities who tend to exhibit more familism (Marsiglia et al., 2011). This is important as hopelessness, particularly due to acculturative stress, can lead to the development of SMI.

Relational-level Risk Factors for PPW Substance Use and Mental Illness. Qualitative data from a 2013 study indicated that pregnant women found family relationships as both helpful and unhelpful (Kuo et al., 2013). Some women identified prejudgments from family members about their substance use as a limiting factor for their recovery (Kuo et al., 2013). Women also indicated that friendships with people who also used substances did not transition into periods of sobriety, limiting their social networks or making it difficult to maintain recovery (Kuo et al., 2013). Latina immigrant women are at higher risk for intimate partner violence during pregnancy (Fortuna et al., 2019). Immigrant women are at higher risk of continued violence, a risk factor for SMI and SUD, because of increased dependence on partners resulting from differing immigration statuses (Fortuna et al., 2019).

Community-level risk factors for SUD/OUD and/or COD SMI. Community risk factors for SUD/OUD and COD SMI include understanding social norms and behaviors at the community level that impact health outcomes (Bonar et al., 2021; Whitesell et al., 2013). Links to childhood experiences in community and academic settings are relevant to discussions on SUD/OUD risk (Whitesell et al., 2013). In rural communities, network density and familial support were indicated as barriers to care for SUD/OUD (Young et al., 2015). Smaller population densities and higher network densities allow for easier tracking of community members among the population (Young et al., 2015). Rural areas have higher network densities that act as a deterrent for treatment because of its impact on anonymity at psychiatric and/or SUD/OUD treatment facilities (Young et al., 2015). People living with SUD/OUD may not want to be public about the disorder or seeking help, thus being identified at a treatment facility may impact social standing in a community environment where social perception is seen as an important facet of daily life (Young et al., 2015). Among community risk factors, stigma is also an important factor in continuing substance use when stigma acts as a barrier to treatment (Henderson and Dressler, 2017; Vargas et al., 2015; Gruß et al., 2021; Renbarger et al., 2020). Substance use stigmatization, a potential risk for the isolation of people living with SUD/OUD, can act simultaneously as a protective factor against substance use and a barrier to care for people with SUD/OUD who do not want to face social stigma in their communities.

Community-level Risk Factors for Latino Substance Use. Along the US-MX border, community perceptions about SUD/OUD are complex. Caetano et al. (2021) posit that among Hispanics living on the US-MX border drinking is perceived as a fun activity and bar patrons in Mexico have a higher tolerance for drunkenness. Marijuana use, on the other hand, is perceived differently along a gender binary with social acceptability of use higher for men than women

(Agoff et al., 2021). Other literature suggests that for people of Mexican descent, substance use, particularly of illicit substances, is largely stigmatized with immigration to the United States while time spent in the United States increases the social acceptability of substance use in a dose-response manner (Borges et al., 2015).

Community-level Risk and Protective Factors for PPW Substance Use Treatment and Recovery. For PPW seeking treatment for SUD/OUD, adverse reactions with primary care providers can be detrimental (Renbarger et al., 2020). Women in a 2020 study found providers to be judgmental, disparaging, and disempowering which resulted in deficient care (Renbarger et al., 2020). Women reported experiences of judgment or differential treatment by medical and pharmaceutical staff when filling prescriptions for medication assisted treatment for SUD prescriptions (Proulx and Fantasia, 2020; Gruß et al., 2021). Relationships formed with other PPW with SUD/OUD and COD SMI can be protective factors in maintaining substance use recovery (Kuo et al., 2013; Gruß et al., 2021). Identifying with a group of other mothers around the idea of motherhood can help maintain recovery and protect against stigma found from families and health care providers within the community (Gruß et al., 2021).

Societal-level risk factors for SUD/OUD and/or COD SMI. Societal risk factors for SUD/OUD and/or COD SMI include overarching sociocultural features and structural concerns (Whitesell et al., 2013). According to Jegede et al. (2020), "structural vulnerability is the condition of an imposed risk of negative health outcomes, for an individual or population, 'through their interface with socioeconomic, political, and cultural/normative hierarchies.'" These include race/ethnicity, risk environments, homelessness, poverty/financial insecurity, self-perception of barriers, stigma, and discrimination that add to structural vulnerability (Jegede et al., 2020). Societal levels are important in consideration for place and identity, as these factors

influence how an individual experiences society. For example, according to a study done by Young et al. (2015), accessibility to health care resources in rural areas is low. This is due to a variety of factors like the location of rural communities in relation to available services and the number of services available within the community itself (Young et al., 2015). Substance use behavior faces stigma at social levels with cultural underpinnings of what SUD/OUD is (Henderson and Dressler, 2017). Understanding how sociocultural factors influence perception about substance use and SUD/OUD is imperative to understanding how people with SUD/OUD are treated by their communities and what resources may be accessible or acceptable for them. In Latino populations in the United States, there is a hesitancy towards drug therapies in treating mental illness and SMI is seen as a personal deficiency (Vargas et al., 2015). These attitudes towards mental health and towards prescription medications can be seen as deterrents for people with SUD/OUD and/or COD SMI from seeking care because they may be doubly stigmatized (Henderson and Dressler, 2017; Vargas et al., 2015). This implies further stigmatization for seeking Medication Assisted Treatment (MAT) for OUD and viewing SUD/OUD as a mental health outcome that may also require medication as a treatment option.

Societal-level Risk Factors for Latino Mental Health Outcomes. Latinos experience discrimination, institutional oppression, and lower social mobility than other ethnic groups in the United States that impact both mental health outcomes and mental health care access (Marsiglia et al., 2011). Latina women, specifically, have exhibited higher rates of mental health disorders and suicidality than their male counterparts (Silva and Van Orden, 2018; Marsiglia at el., 2011). The higher prevalence of these mental health outcomes in Latino populations may be associated with acculturative stress that include isolation and adversity while adjusting to a new culture (Marsiglia et al., 2011).

Societal-level Barriers to Care for PPW with SUD/OUD and/or SMI. PPW experience treatment and barriers to care for SUD/OUD and/or COD SMI differently (Renbarger et al., 2020; Dworkin et al., 2017). For PPW, perceived stigma from providers and fear over the legality and potential legal consequences of substance use while pregnant can act as barriers to care and treatment (Renbarger et al., 2020; Dworkin et al., 2017). In the United States, negative attitudes towards people living with SUD/OUD act as deterrents for women who have SUD/OUD and are pregnant. (Renbarger et al., 2020). These cultural attitudes toward substance use set the stage for treatment of PPW with SUD/OUD in treatment and clinical settings. For Latina immigrant mothers, social constructs including gender and class contribute to experiences of poverty, racism, and lower access to quality care, particularly for mental health services (Fortuna et al., 2019).

Culture and Identity. Culture and identity are also key components in understanding behavioral motivations and social determinants of health that can include protective factors offered by inclusion in a particular culture as well as risk factors for high-risk behaviors based on perceptions and experiences of discrimination (Lo et al., 2012; Jegede et al., 2020; Caetano et al., 2021; Brockie et al., 2015). Discrimination, educational attainment, and income have impacts on SUD diagnoses (Lo et al., 2012). Discrimination acts as a social barrier in service utilization and access and acts as a specific stressor to the individuals who face discrimination (Lo et al., 2012). Structural vulnerability also intersects with geographic positionality and the overarching structure of where someone lives (Lo et al., 2012; Jegede et al., 2020). For example, minority discrimination may be perceived as a higher threat in a more culturally homogenous place. Hispanic populations along the US-MX border were more likely to cross the border to drink in Mexico, consume more drinks per week, and binge drink in comparison to White non-Hispanic

groups and Hispanics who lived away from the border (Caetano et al., 2021). Common reasons given for motivation to cross the US-MX border to drink include cheaper drinks, lower drinking age, friend outings, and more fun (Caetano et al., 2021).

Another important factor relating to identity and social interaction is the phenomenon of adverse childhood experiences (ACEs) (Brockie et al., 2015; Azimi and Connolly, 2022). A study done of Native American adolescents and young adults found adverse childhood experiences to be linked to several mental health and behavioral health outcomes including polydrug use, or the simultaneous use of multiple drugs, PTSD, depression, and suicidality (Brockie et al., 2015), all of which have known comorbidities. For Native Americans, the reservation system comes with its own unique impacts on daily life, experiences of stress and trauma, and health outcomes (Brockie et al., 2015). Reservation segregation increases rates of poverty, incidence of stress, and limits access to healthcare based on availability of services (Brockie et al., 2015). Discrimination towards Native Americans is also positively related to experiences of anger, depression, and suicidality among youth populations and increased early initiation into substance use (Brockie et al., 2015). There is an established dose-response relationship between adversity in childhood and increased risk for alcohol and illicit substance use, as well as for mental health disorders and intimate partner violence (Brockie et al., 2015). According to the Brockie et al. (2015) study of Native American youth, adverse childhood experiences were linked to mental health outcomes and substance use, with exposure to intimate partner violence significantly increasing incidence of post-traumatic stress disorder and polysubstance use. Thus, childhood adversity acts as a direct risk factor for substance use.

Contexts along US-MX Border. Contexts along the US-MX border influence social determinants of health for Latino populations in the region. Poverty, unemployment, low

education, poor health, high rates of crime including possible drug trafficking and violence impact the lives of residents along the US-MX border (Cherpitel et al., 2020; Borges et al., 2015; Moya and Shedlin, 2008). Proximity to the US-MX border also prompts the crossing of the border to seek drugs, alcohol, and prescriptions which can increase the likelihood of polysubstance use (Cherpitel et al., 2015). According to a 2022 study, youth in the US-MX border region who indicated daily substance use had higher reported perceptions of neighborhood stress and immigration stress specifically from living in a border community (Brady et al. 2022). Policies in the binational region, including lower drinking age and the lower cost of prescription drugs in Mexico, can act as a motivator to cross the US-MX border to seek these substances, exacerbating SUD/OUD in the region (Borges et al., 2015). Living along the US-MX border also provides some social protective factors to include strong familial and social support, religiosity, and low levels of drug use and acceptability in Mexico which has influences on Latinx populations across the border (Wallisch and Spence, 2006). Agoff et al. (2021) describe encounters with law enforcement in Mexico as a deterrent for cannabis use among Mexican men, indicating a stronger concern for criminality than familial attitudes.

Location provides contextualization for substance use availability, cultural norms, and important factors for health care accessibility, including care for substance use and mental health disorders (Marks et al., 2021; Brockie et al., 2015; Young et al., 2015). A study across three sites in North America (Mexico, the United States, and Canada) indicates that dissemination of drug use has setting-specific factors (Marks et al., 2021). This highlights the need to study substance use in its full context, to include place-based substance use patterns. “Where one lives is a critical variable in mediating access to quality health care, economic opportunities, social connections, and social capital, all of which determine health status” (Brockie et al., 2015). Rural

areas see denser social networks than urban areas (Young et al., 2015) and areas along US-MX border have unique outcomes based on positionality on an international border both culturally and for substance use behavior. Location-based factors also impact treatment for PPW with SUD/OUD and COD SMI. PPW with PTSD and SUD in rural areas, for example, are limited economically, lack resources, and face economic instability that impact their available avenues for treatment (Dworkin et al., 2017).

A 2020 study looking at differences between substance use on and off the US-MX border in Texas found that substance use was higher in one Texas city (Laredo) on the border in comparison to San Antonio, which is off the border (Cherpitel et al., 2020). There was increased neighborhood disadvantage, a lower proportion of non-Hispanic residents, and a larger number of residents who frequently crossed the border (Cherpitel et al., 2015). A 2015 study found that crossing the US-MX border is associated with higher risk of substance use, particularly for those who cross the border to fill prescriptions or for drinking and nightlife activities (Cherpitel et al., 2015). Rapid population growth, acculturative stress, and immigration insecurity, mixed immigration status and the fear of deportation can also influence substance use behaviors (Borges et al., 2015).

Along the US-MX border, migration to the United States from Mexico is another salient factor for identity and behavior (Borges et al., 2015; Garcini et al., 2017). Research indicates that substance use is likely to increase for Mexican migrants with more cumulative exposure to United States culture to include Mexican Americans born on the U.S. side of the US-MX border (Borges et al., 2016). This indicates that acculturation to the United States among immigrant populations may increase substance use and subsequent SUD/OUD. Many areas along the US-MX border are rural and include colonias, which are “unregulated settlements characterized by

lack of basic public services" (Wallisch and Spence, 2006). Undocumented status in the United States can increase risk factors including discrimination, victimization, and fear of deportation (Garcini et al., 2017). These factors increase the risk for SMI and fear of deportation acts as a barrier to care. In Wallisch and Spence's (2006) study, availability of drugs, with availability being a physical and social construct, was prevalent for US-MX border residents with slightly more prevalence in colonias. Latino populations in the United States face higher rates of socio-economic stress than other populations that increase the risk for substance use, with U.S.-born Latinos reporting higher substance use than immigrants (Moya and Shedlin, 2008).

Impact of PPW SUD/OUD and/or COD SMI on their Children

Substance use and SMI during and after pregnancy also increase physical and social risk factors for their children (Forray and Foster, 2015; Renbarger et al., 2020; Wilder et al., 2015; Kramlich et al., 2018; Lambert et al., 2010). Alcohol, tobacco, and illicit substance use while pregnant can cause a number of adverse outcomes for fetuses and children to include low birth weight, placental abruption, infant mortality, and social and behavioral issues (Forray and Foster, 2015; Renbarger et al., 2020; Wilder et al., 2015; Kramlich et al., 2018; Lambert et al., 2010). Fetal exposure to nicotine can cause umbilical cord damage, miscarriage, low birthweight, and increased infant morbidity and mortality (Forray and Foster, 2015; Renbarger et al., 2020). After birth, exposure to second-hand smoke increases risk for respiratory health issues, sudden infant death syndrome, behavioral and cognitive impairment, and increased likelihood of cigarette and other substance use for the child later in life (Forray and Foster, 2015). Fetal exposure to alcohol can produce fetal alcohol syndrome, neurodevelopmental outcomes, nervous system deficits, oral clefts, speech and language issues, behavioral issues, and long-term psychosocial consequences in adulthood (Forray and Foster, 2015; Renbarger et al., 2020). Fetal exposure to cannabis can

increase likelihood for low birth weight, preterm labor, adverse effects on brain growth, and behavioral problems (Forray and Foster, 2015). Fetal exposure to cocaine can increase adverse pregnancy outcomes including preterm labor, placental abruption, and low birth weight (Forray and Foster, 2015). Long-term effects include cognitive issues, lower short-term memory, delinquent behavior, and engaging in risky behaviors like substance use and sexual activity earlier in life (Forray and Foster, 2015). Fetal exposure to methamphetamine increases the likelihood for fetal death, including miscarriage, low birth weight, and developmental and behavioral issues in children (Forray and Foster, 2015). Fetal exposure to opioids, both illicit and prescribed, are at risk for Neonatal Abstinence Syndrome (NAS). NAS symptomology includes irritability, hypertonia, tremors, difficulty feeding, seizures, and respiratory distress (Forray and Foster, 2015). Fetal exposure to opioids may also result in low birth weight, toxemia, and infant mortality (Forray and Foster, 2015). In infants and children, opioid exposure in-utero increases the risk for microcephaly, behavioral problems, and sudden infant death syndrome (Forray and Foster, 2015). The physical risks to fetal development and child development after birth related to substance use indicate the importance of treating PPW with SUD to promote improved long-term health outcomes for both mother and child.

Maternal substance use also increases social risk for children, including adverse relational experiences between mother and child, financial instability, child maltreatment, child removal from home, and other experiences of trauma (Bray et al., 2022; Wilder et al., 2015). Substance use in mothers increases the risk for child neglect and abuse (Chapman and Wu, 2013). In 2018 it was estimated that about a quarter of children in families investigated by child protective services had a caregiver who abused substances (Oh et al., 2018). Children born to people who use cocaine may experience dysfunctional parenting and chaotic home environments adding to

the social risk factors for the child (Forray and Foster, 2015). Alongside exposure to substances in-utero, children born to PPW who use substances may also experience adverse childhood experiences and health disparities related to poverty (Kramlich et al., 2018). Children exposed to substance use in rural areas are faced with additional adverse experiences related to rurality that may influence their health and social outcomes (Kramlich et al., 2018). HIV infection related to SUD in women who are pregnant, or breastfeeding may cause vertical transmission from mother to child (Dévieux et al., 2016).

Psychological distress, including SMI like anxiety and depression is common in PPW (Kingston et al., 2012). Psychological distress in pregnancy has shown to influence fetal and child development (Kingston et al., 2012). Prenatal distress impacts cognitive, behavioral, and motor development, and postpartum distress also has adverse social outcomes for children (Kingston et al., 2012). Mothers experiencing trauma have more difficulty in parenting including developing healthy attachment with their children that could result in relational trauma for the child (Fortuna et al., 2019). Women with PTSD may have negative views of their children that impact their perception of their children and increase risk for abuse and neglect (Dworkin et al., 2017). Children with mothers who have depression are at an increased risk of neglect and abuse (Chapman and Wu, 2013). Co-occurring substance use and SMI among postpartum women may also have consequences for the home environment, including chaotic and violent homes, and increased child abuse and neglect (Kuo et al., 2013). SUD/OUD and/or COD SMI in pregnancy may increase the likelihood of postpartum depression, impair the relationship between mother and child, and increase the likelihood of developmental disorders in children (Salameh et al., 2019).

Health Care Access and Treatment

SUD/OUDs are highly stigmatized conditions (Jegede et al., 2020). A large part of this stigma comes from the idea that substance use is a choice and because substance use is a criminalized behavior (Jegede et al., 2020). This can act as a barrier to seeking care (Renbarger et al., 2020; Dworkin et al., 2017). Health-related stigma, like that associated with SUD/OUD, can lead to exclusion based on the health condition (Livingston et al., 2011). Stigma can be thought of in terms of self-stigma and social stigma (Livingston et al., 2011). Self-stigma is related to negative self-view and negative emotional states while social stigma is a structural feature of society that includes stereotypes that are influenced and enforced by policy and institutional procedures (Livingston et al., 2011). Both self and social stigma act as deterrents for seeking healthcare and can have impacts on the overall health of people living with SUD/OUD (Livingston et al., 2011; Renbarger et al., 2020; Dworkin et al., 2017). Among Mexican populations, stigmatization of cannabis use seemed to be stronger towards female cannabis users from family members than towards their male counterparts, potentially exacerbating stigma as a health barrier for women of Mexican descent (Agoff et al., 2021). Stigmatization can increase marginalization of people who have SUD/OUD, particularly through the criminalization of substances and substance use and the idea that substance use is a moral and criminal issue (Livingston et al., 2011). Substance use stigmatization can also impact employment, housing, and social relationships for people who are living with a SUD/OUD (Livingston et al., 2011). As we know, employment and housing insecurity and social stress are risk factors for substance use, thus indicating a cyclical relationship between these factors and substance use, with each compounding the other.

Stigma associated with SUD/OUD also act as a determinant for other health outcomes (Livingston et al., 2011). Poor mental and physical health, delayed recovery, risky behaviors, and

barriers to care can all be exacerbated by the stigma associated with SUD/OUD (Livingston et al., 2011). Health care providers who hold preconceptions of SUD/OUD can also act as barriers to adequate health care for people with SUD/OUD (Livingston et al., 2011; Renbarger et al., 2020; Dworkin et al., 2017). In fact, even stereotypes associated with medication-assisted treatment (MAT) and provider stigma of the behavioral components of SUD/OUD deter patients from seeking help in medical settings (Livingston et al., 2011).

Among study participants in a 2011 study looking at the role of discrimination as a SUD/OUD stressor, discrimination was reported highest in African American respondents and lowest in Latino respondents (Lo et al., 2012). The Lo et al. (2012) study also indicated that income showed to be a moderator for SUD/OUD, while low education and high discrimination experience had a positive effect on SUD/OUD. While there were no differences between minority identity (African American, Asian American, Latino) and SUD/OUD diagnosis, there was a relationship between identifying as male and having experienced discrimination and SUD/OUD (Lo et al., 2012).

Within Latino populations there exists a stigma towards mental illness and hesitancy to seek treatment for SMI unless in dire circumstances and a tendency to rely more on faith-based interventions (Vargas et al., 2015). This type of stigmatization can leave people with SMI with less resources if they seek treatment, particularly for those who are on antidepressants (Vargas et al., 2015). Participants in a 2015 study indicated that depression was a result of personal failings while also indicating that fear of addiction to antidepressants and loss of social support from social networks after starting antidepressants were deterrents to seeking mental health care and mental health regimen adherence (Vargas et al., 2015). Loss of social support for seeking help can leave vulnerable populations with little options for treatment and disconnection from social

networks may have negative impacts on the individual (Markowski et al., 2021; Williams and Nida, 2011). Robust personal emotional support networks are crucial for people with SUD/OUD and/or COD SMI. With Mexican culture emphasizing familism, strong family network ties among family members (Agoff et al., 2021), ostracism based on issues like SMI, seeking mental health care to include medication, or SUD/OUDs that are stigmatized may dramatically increase the vulnerability of people in this population seeking care (Markowski et al., 2021; Williams and Nida, 2011).

Health disparities can be exacerbated by policies that add to systemic socioeconomic disadvantages and impact health care quality and accessibility (Jegede et al., 2020). African Americans, for example, might have lower access to buprenorphine, a form of MAT for OUD as a result of lacking insurance coverage (Jegede et al., 2020). Disproportionate incarceration and stigma also impact treatment adherence and availability for African American populations in the United States (Jegede et al., 2020). Based on a 2020 study on African Americans' perceived barriers to SUD/OUD treatment, a few points stand out. African American respondents indicated problems with transportation, concern about familial opinion, embarrassment and shame, and cost barriers among the highest ranked perceived barriers of care (Jegede et al., 2020). This indicates individual, relational, and structural barriers to care from an ecological perspective. Another key theme from the Jegede et al. (2020) study includes over half of the participants indicating anticipated discrimination by housing officials, teachers, employers, colleagues, and police.

Policies that impact Latino populations in the United States, particularly immigrants at the US-MX border, are based in the criminalization of both substance use and undocumented status, the fear of further criminalization of their migrant status and subsequent deportation

(Moya and Shedlin, 2008). Immigrant barriers to utilization of SUD/OUD treatment are economic, cultural, and political in nature (Moya and Shedlin, 2008). Health disparities impacting this population include low insurance and healthcare accessibility, socioeconomic disadvantages, and a higher incidence of chronic disease (Moya and Shedlin, 2008). Healthcare accessibility among this population also include affordability, particularly when access to assistive services like Medicaid/CHIP are dependent on citizenship status (Moya and Shedlin, 2008). These factors contribute to overall health disparities, but with the dual criminalization of substance use and migration status, populations who are undocumented with SUD/OUD and are economically disadvantaged are even less likely to seek or receive care for SUD/OUD (Moya and Shedlin, 2008; Brady et al., 2022). Known health disparities along the US-MX border caused by discrimination, immigration policy, and a lack of social programs have been associated with increased stress and substance use among Latino youth (Brady et al., 2022).

PPW may experience negative interactions with care providers that disempower them in their care and act as deterrents for taking full advantage of the medical care available to them, including substance use treatment (Renbarger et al., 2020; Meinhofer et al., 2020). PPW with OUD often see better outcomes when treated with MAT including methadone and buprenorphine (Meinhofer et al., 2020; Wilder et al., 2017; Wilder et al., 2015; Coleman-Cowger, 2012). Despite the known benefits of MAT in outcomes for PPW and their children, this type of treatment is still largely unavailable to these populations (Meinhofer et al., 2020). Challenges for care include initiating and remaining in treatment, structural barriers including socioeconomic status, stigmatization of substance use, and the criminality of substance use (Meinhofer et al., 2020). Fears of the criminalization of substance use in PPW include incarceration and the removal of their child(ren) (Renbarger et al., 2020; Dworkin et al., 2017; Kuo et al., 2013;

Haffajee et al., 2022). This fear can act as a deterrent for disclosure of substance use or seeking and enrolling in substance use treatment (Lambert et al., 2010; Haffajee et al., 2022). The known effects of substance use while pregnant on the fetus have caused mandatory reporting policies for physicians that require notification of maternal substance use to child protective services (Lambert et al., 2010). These criminalizing policies may deter pregnant women from seeking adequate care for substance use (Lambert et al., 2010).. Fears of MAT causing NAS are also present in pregnant women who may stop MAT for fear of harm being caused to their child (Kuo et al., 2013; Mattocks et al., 2017). Medical care providers are often not educated on the intersection of pregnancy and SUD (Renbarger et al., 2020).

Treatment for SMI among PPW also faces salient barriers (Le Strat et al., 2011; Coleman-Cowger, 2012). Pregnant women with depression may not receive pharmacologic or psychotherapeutic care while pregnant (Le Strat et al., 2011). Among past-year pregnant women, there is an increased need for mental health treatment for women entering SUD/OUD treatment who often have co-occurring mental health disorders (Coleman-Cowger, 2012). African American and Hispanic women are underserved and undertreated in addressing mental health needs, although these populations have lower need, those with need are severely underserved (Coleman-Cowger, 2012). According to a 2011 study, a majority of depressed pregnant women did not seek help (Le Strat et al., 2011). Depression is largely unrecognized and untreated in most women, while anxiety treatment was higher and substance use treatment was lower (Le Strat et al., 2011). Latina PPW seeking care and services for violence are culturally stereotyped as opportunistic; for pregnant women, this extends to a belief that women want to give birth in the United States as a pathway to citizenship (Fortuna et al., 2019). These stereotypes have

influenced immigration policies that limit access to healthcare and direct services for reproductive and preventive care and treatment for Latina PPW (Fortuna et al., 2019).

Other barriers to care that impact the health and welfare of people living with SUD/OUD are related to policies and structural aspects of society like money and funding (Ashford et al., 2018; Young et al., 2015; Dworkin et al., 2017). Programs lack funding, workforce development for SUD/OUD remains low, and there is a lacking in evidence-based practices among organizations working with SUD/OUD (Ashford et al., 2018). Ashford et al. (2018) indicate that considerations regarding physical location, generational status, educational status, and employment type are lacking in relation to SUD/OUDs and their treatment, and that regional location is a significant factor of interest that shapes barriers to care. Rural communities are based further away from care resources and must travel further distances, thus spending more time than urban residents seeking care for a variety of health issues, including SUD/OUD; in fact, distance was indicated as the strongest barrier to care for rural residents (Young et al., 2015). Rural areas are more likely to lack professional care, including diverse care providers, limiting the accessibility of care for people living in these areas (Young et al., 2015; Dworkin et al., 2017). Location and allocation of services is also a crucial point in health care accessibility. Structurally, locating services in priority populations makes sense in increasing accessibility while the absence of available and nearby services acts as a detriment.

PPW Substance Use Treatment Programs

In order to address SUD/OUD among PPW, SAMHSA developed a Grant Program for Residential Treatment for PPW, also called PPW Programs (Meinhofer et al., 2020). Prior research indicates that residential treatment settings result in better outcomes for SUD/OUD, however, SAMHSA recently expanded funding for outpatient programs as well (Meinhofer et

al., 2020). Among 13,000 substance abuse treatment facilities surveyed, only 40% offered women-centered programming in 2015 (Martin et al., 2015; Krans et al., 2018).

Earlier research on grants from the Center for Substance Abuse Prevention awarded in the 90s for PPW substance use care showed positive impacts for participants (Eisen et al., 2000). Women who received the intervention received a greater number of services, including substance use education and prevention interventions, than those who did not (Eisen et al., 2000). Women who received the intervention were more likely to have reduced recent drug use in the postpartum period than women who did not; though these outcomes were not sustained by the 6-month postpartum period (Eisen et al., 2000). PPW Programs have increased in the United States from 17% in 2007 to 23% in 2018, but the locations of PPW Programs are not evenly distributed throughout the country (Meinhofer et al., 2020). Texas, in particular, has one of the lowest numbers of PPW Programs. This is of particular importance as southern states show higher rates of foster care entries for parental drug use, more pregnant women entering SUD/OUD treatment, and lower likelihood of having insurance (Meinhofer et al., 2020).

For OUD in pregnant women, clinical recommendations include using MAT to promote better health outcomes for both the mother and child (Krans et al., 2018; Mattocks et al., 2017). SAMHSA also indicates that MAT needs to be adjusted in pregnancy to account for higher metabolic needs during pregnancy, access to family planning resources, and increased access to contraceptives after delivery (Krans et al., 2018). Pregnant women may face challenges to MAT (Mattocks et al., 2017). These challenges include psychosocial challenges like housing, money, childcare, intimate partner violence, and SMI (Mattocks et al., 2017). For women in treatment for SUD while pregnant, there is internal stigma about taking MAT (Mattocks et al., 2017). Some women also struggle in finding the right dose of MAT (Mattocks et al., 2017).

One PPW Program in Texas called the MIRRORS Program found improved levels of family functioning and parenting and decreased levels of substance use among the participants who enrolled in the program (Bray et al., 2022). Participants of the MIRRORS Program indicated the variety of services addressing their different needs and trauma-informed care that included counseling to learn how to deal with past traumas were largely beneficial in their successes (Bray et al., 2022). These findings indicate how holistic and integrated approaches to care that address social determinants of health and individual risk factors can be beneficial in the treatment of SUD/OUD and/or COD SMI. A qualitative study from 2013 indicated that women living with substance use and depression found value in psychotherapeutic treatment to address their mental health needs along with substance use to be beneficial (Kuo et al., 2013).

Another program in Pennsylvania showed that 80% of patients enrolled in the Pregnancy Recovery Center at a Pittsburgh hospital enrolled in buprenorphine treatment during pregnancy and that these women had appropriately increased doses of buprenorphine during pregnancy (Krans et al., 2018). There was increased likelihood of Pregnancy Recovery Center participants to attend postpartum appointments (Krans et al., 2018). There may also be an association between positive outcomes from Pregnancy Recovery Center services and likelihood for continued breastfeeding, an important action to promote infant health and infant-mother bonding (Krans et al., 2018).

Pregnant women with SUD/OUD need to address pregnancy, substance use, socioeconomic factors including housing instability and intimate partner violence, and barriers to care for both pregnancy and substance use (Hodgins et al., 2019; Gruß et al., 2021). Pregnancy is an opportunity to provide women with the SUD/OUD care they need (Hodgins et al., 2019). A qualitative study done in Massachusetts found that programs catered for PPW with SUD/OUD

can improve patient-provider relationships, service delivery, care teams, and improvement in facing structural challenges (Hodgins et al., 2019). Coordinated care for PPW was able to cater services to address gaps in care and social needs for the patients (Hodgins et al., 2019). Community health workers were able to build relationships with patients that enhanced their care (Hodgins et al., 2019).

A study of an integrated care program found that women who engaged in the program had sustained engagement in treatment, had access to coordinated medical and social resources, and established a community between participants centered around motherhood (Gruß et al., 2021). This integrated care model also improved access to coordinated care including social and medical services that participants needed (Gruß et al., 2021). The women in this study indicated that low access to integrated care models resulted in fragmented care between obstetricians and substance use treatment providers that hindered their treatment (Gruß et al., 2021). This study found that engagement with peer support was key in treatment retention and accountability in seeking sobriety among participants (Gruß et al., 2021). Peer recovery groups also enabled women to identify with motherhood in a way that combatted the social stigma participants experienced elsewhere (Gruß et al., 2021).

El Paso, TX Area Description

According to 2020 U.S. Census data, the population of El Paso is estimated at 865,657 people in the 1,012.69 square mile area of the city, with a population density of 791 people per square mile indicating El Paso as a large urban area. El Paso is a predominantly Hispanic city, with an estimated 82.9% of the population identifying as Hispanic or Latino and a large immigrant population at 24.1% of the population being foreign born between 2015-2019 (Census Bureau, 2020). While English is spoken throughout the city, 70.6% of the population is estimated

to speak another language at home (Census Bureau, 2020) with much of that foreign language being Spanish. The median household income between 2015-2019 in the city was $46,871 with the per capita income in 2019 estimated at $21,683 and 17.6% of the population falling below the poverty line. 78.5% of the population over the age of 25 had at least a high school diploma while only 23.3% of the population is estimated to have completed a bachelor's degree or higher between 2015-2019 (Census Bureau, 2020). An estimated 24.9% (almost a quarter) of the population under the age of 65 years did not have health insurance. El Paso, County and the immediate surrounding area also contains colonias, areas that are defined as being within 150 miles of the US-MX border and lacking in basic infrastructure (Anders et al., 2008). Colonias are usually predominantly Latino with higher rates of uninsured populations, language other than English spoken at home (Spanish), and higher rates of immigrant populations (Anders et al., 2008). This combination of rural underdeveloped communities surrounding an urbanized area with high Latino and immigrant populations in both make the El Paso Metropolitan Area a unique and important place of study for the health outcomes of Latinos in the United States, particularly along the US-MX Border. According to data from Healthy Paso Del Norte, El Paso County (2020) reported 12.2 deaths per 100,000 people due to drug poisoning between 2018-2020.

Study Purpose

The purpose of this study is to assess relationships between trauma and social determinants of health among PPW with SUD/OUD and or COD SMI enrolled in a women's residential treatment facility in El Paso, TX participating in a trauma-informed substance use treatment program designed to reduce the impact of trauma, and resulting substance use and CODs, on minority PPW and their families in the El Paso, TX area, a predominantly Hispanic (Mexican-American) region in west Texas.

Study Aims

To describe PPW in the El Paso, Texas area with SUD/OUD and/or COD SMI in a trauma-informed women's residential treatment facility including prevalence rates of SMI and substance use disorders and demographic characteristics (age; ethnicity).

To examine the relationships between trauma and the social determinants of health of economic stability and social and community contexts among PPW with SUD/OUD and/or COD SMI in a trauma-informed women's residential treatment center serving the El Paso, Texas region.

Hypotheses

Hypothesis 1

H_0: PPW from the El Paso, Texas area with SUD/OUD and/or COD SMI who have experienced trauma are just as likely to already have children and a similar number of children than those who have not experienced trauma.

H_A: PPW from the El Paso, Texas area with SUD/OUD and/or COD SMI who have experienced trauma are more likely to already have children and a higher number of children than those who have not experienced trauma.

Hypothesis 2

H_0: PPW from the El Paso, Texas area with SUD/OUD and/or COD SMI who have experienced trauma are just as likely to have experienced housing insecurity than those who have not experienced trauma.

H_A: PPW from the El Paso, Texas area with SUD/OUD and/or COD SMI who have experienced trauma are more likely to have experienced housing insecurity than those who have not experienced trauma.

Hypothesis 3

H_0: PPW from the El Paso, Texas area with SUD/OUD and/or COD SMI who have experienced trauma are just likely to have enough money to meet their needs than those who have not experienced trauma.

H_A: PPW from the El Paso, Texas area with SUD/OUD and/or COD SMI who have experienced trauma are less likely to have enough money to meet their needs than those who have not experienced trauma.

Methods

Study Population

This thesis is based on secondary data analysis of data collected in a trauma-informed women's residential treatment center. The parent study data accessed for the proposed study are deidentified treatment intake data from 142 PPW who were enrolled in a substance abuse women's residential treatment facility in the El Paso, Texas Region from 2018 to 2022 (grant number 1H79TI080319 PI: T Mangadu).

Study Design

This Research Thesis is a secondary analysis utilizing de-identified data collected under grant number 1H79TI080319 (PI: T Mangadu) from Substance Abuse and Mental Health Services Administration (SAMHSA). The Women's Residential Treatment Program from which the data was collected is a trauma-informed treatment program for PPW with SUD/OUD. At intake, participants were given the Government Performance and Results Act (GPRA) Client Outcome Measures for Discretionary Programs survey from the SAMHSA Center for Substance Abuse Treatment (CSAT). The GPRA is a standardized survey that measures basic demographic information for program participants, behavioral health diagnoses, SUD diagnoses, drug and alcohol use, mental and physical health problems and treatment/recovery, and social determinants of health. The social determinants of health measured in the GPRA include socioeconomic status (employment and income), educational attainment, family and living conditions, experiences of trauma, and social connectedness. Deidentified intake data across 4 years (2018-2022) was analyzed for this cross-sectional study.

Procedure

The GPRA survey was administered by a clinician at intake to the program as part of the parent study. Survey data was downloaded into an excel spreadsheet, cleaned, and analyzed for frequencies using the IBM SPSS statistical analysis software (version 25).

Measures

Descriptive: Behavioral Health Diagnoses

Behavioral Health Diagnoses were measured from section A of the GPRA "Behavioral Health Diagnoses" with a comprehensive list of SUD diagnoses and Mental Health Diagnoses. Up to three diagnoses were allowed to be selected for each participant. Classifications for diagnoses were based on the International Classification of Diseases, 10th revision, Clinical Modification codes (ICD-10-CM).

Descriptive: Demographic Information

Demographic information was collected from GPRA Section A "Demographics" – Question 2 indicates Hispanic or Latino (answers: Yes; No; Refused) with follow-up IF YES "What ethnic group do you consider yourself? Please answer yes or no for each of the following. You may say yes to more than one" with "yes; no; refused" options for the following categories: Central American; Cuban; Dominican; Mexican; Puerto Rican; South American; and Other. "Other" has an open-ended space for specification. Question 3 asks for race, "What is your race? Please answer yes or no for each of the following. You may say yes to more than one" with "Yes; no; refused" options for the following categories: Black or African American; Asian; Native Hawaiian or other Pacific Islander; Alaska Native; White; and American Indian. Age is determined by question 4 "What is your date of birth?" in Month/Day/Year format.

Trauma

Trauma was measured in the GPRA under section F “Mental and Physical Health Problems and Treatment/Recovery” question 12 “Have you ever experienced violence or trauma in any setting (including community or school violence; domestic violence; physical, psychological, or sexual maltreatment/assault within or outside of the family; natural disaster; terrorism; neglect; or traumatic grief)?” with options of “Yes; No; Refused; and Don’t know.”

Outcome Variables: Social Determinants of Health

The GPRA measured several different domains of social determinants of health. Housing insecurity is measured in Section C “Family and Living Conditions” question 1 “In the past 30 days, where have you been living most of the time?” with answer choices of “Shelter; Street/Outdoors; Institution; and Housed” with the “Housed” category having sub-choices of "Own/rent apartment, room, or house; Someone else’s apartment, room, or house; Dormitory/college residence; Halfway house; Residential treatment; and Other with an open ended space to specify.” Number of children is measured by section C question 7 “Do you have children?” with answer choices of “Yes; No; Refused; and Don’t Know” with the “Yes” category having an open-ended follow-up question 7.a “Number of children?” Socioeconomic status can be measured by Section D “Education, Employment, and Income” question 4 “Approximately, how much money did YOU receive (pre-tax individual income) in the past 30 day from…” with open-ended categories of “a. Wages; b. Public Assistance; c. Retirement; d. Disability; e. Non-legal income; f. Family and/or friends; and Other,” that asks for an amount from each source and from Section D question 5 “Do you have enough money to meet your needs?” with answer choices of “Not at all; A little; Moderately; Mostly; Completely; Refused; and Don’t Know.”

Data Analysis

Univariate analysis was conducted to assess normality for all continuous variables. Descriptive statistics were used to describe the sample population of the study. Frequencies were performed for demographic characteristics including gender, Hispanic ethnicity, and approximate age in years. Frequencies were conducted for having children, number of children, currently pregnant, and ever experienced trauma. Crosstabs were run for experienced trauma by Hispanic ethnicity.

A series of bivariate analyses were performed to test for relationships between the factor of interest (ever experienced trauma) and the outcome variables.

To test Hypothesis 1, a two-sample t-test was conducted to assess for an association between Number of Children and Experiences of Trauma.

To test Hypothesis 2, a Chi Square test was performed between Experiences of Trauma and living arrangement in the Past 30 Days to assess for an association between trauma and housing insecurity.

To test Hypothesis 3, a Chi Square was used to assess for a relationship between Experiences of Trauma and Self-reported enough money to meet needs. A Mann-Whitney Rank Sum test was used to assess for a relationship between Experiences of Trauma and Past 30-day Income.

Results

Descriptive Statistics

Table 1

Participant Demographics

		Frequency	Percent
Valid	**Female**	140	100.0
Hispanic Ethnicity			
		Frequency	**Percent**
Valid	**Not Hispanic**	26	18.6
	Central American	5	3.6
	Dominican	1	.7
	Mexican	102	72.9
	Puerto Rican	5	3.6
	Other	1	.7
	Total	140	100.0
Approximate age in years.			
N	**Valid**	140	
	Missing	0	
Mean		27.88	
Median		27.00	
Std. Deviation		5.758	
Skewness		.441	
Minimum		18	
Maximum		42	

All participants in this study were female. 81.4% of participants indicated Hispanic ethnicity. The largest Hispanic ethnic group among participants were those of Mexican descent/origin at 72.9% (n=102). All participants were over the age of 18 with a minimum of 18 years of age, a maximum of 42 years of age, a median of 27 years of age, and an average of approximately 28 years of age.

Table 2

Past Month Income

Enough Money to Meet Needs			
		Frequency	Percent
Valid	Missing	1	.7
	Not at all	57	40.7
	A little	33	23.6
	Moderately	15	10.7
	Mostly	22	15.7
	Completely	12	8.6
	Total	140	100.0

Total Income (Past Month)		
N	Valid	140
	Missing	0
Mean		361.43
Median		200.00
Std. Deviation		460.05
Skewness		2.444
Minimum		0.00
Maximum		3000.00

40.7% of participants (n=57) indicated not having enough money to meet needs. The minimum of total income in the past 30 days from those surveyed was $0 from any source of income. The mean past-30-day income was $361.43 with a median of $200.00 and a maximum of $3,000.00.

Table 3

Living Arrangement

Past 30-day Living Situation			
		Frequency	Percent
Valid	Shelter	10	7.1
	Street/Outdoors	3	2.1
	Institution	17	12.1
	Housed	110	78.6
	Total	140	100.0

Housing			
		Frequency	Percent
Valid	Not Applicable	30	21.4
	Own/Rent apartment, room, or house	42	30.0
	Someone else's apartment, room, or house	55	39.3
	Residential treatment	13	9.3
	Total	140	100.0

78.6% of participants (n=110) indicated that they were housed for the past 30 days. 12.1% (n=17) indicated that they lived in an institution, 7.1% (n=10) indicated that they lived in a shelter, and 2.1% (n=3) indicated that they lived outdoors. Of the participants who were housed in the past 30 days, 30% (n=42) indicated that they owned or rented their own apartment, room, or house. 39.3% (n=55) indicated they were housed in someone else's apartment, room, or house, and 9.3% (n=13) indicated that they were living in a residential treatment facility.

Table 4

Children and Pregnancy

Have Children			
		Frequency	**Percent**
Valid	**No**	5	3.6
	Yes	135	96.4
	Total	140	100.0
Number of Children			
N	**Valid**	135	
	Missing	5	
Mean		2.73	
Median		2.00	
Std. Deviation		1.663	
Skewness		.948	
Minimum		1	
Maximum		8	
Currently Pregnant			
		Frequency	**Percent**
Valid	**No**	89	63.6
	Yes	43	30.7
	Unknown	8	5.7
Total		140	100.0

96.4% of participants (n=135) indicated already having children. Of those who had children, the minimum number of children was 1 child, and the maximum number of children was 8. The average number of children was about 3 with the median number of children at 2.

30.7% (n=43) of participants indicated that they were currently pregnant at intake to the program.

Table 5

Substance Use Disorder Diagnosis

SUD and COD Diagnosis		Frequency	Percent
Valid	Unknown	15	10.7
	Alcohol use disorder	17	12.1
	Opioid use disorder	19	13.6
	Cannabis use disorder	15	10.7
	Cocaine and other stimulant use disorder	73	52.1
	Inhalant use disorder	1	.7
	Total	140	100.0

Positive Screening for COD		Frequency	Percent
Valid	Not applicable	8	5.7
	No	2	1.4
	Yes	130	92.9
	Total	140	100.0

Among participants, Cocaine and Other Stimulant Use Disorder was the most prevalent SUD diagnosis at 52.1% (n=73) followed by OUD at 13.6% (n=19), Alcohol Use Disorder at 12.1% (n=17), and Cannabis Use Disorder at 10.7% (n=15). 92.9% of participants screened positive for a co-occurring SUD and/or SMI.

Table 6

Experiences of Trauma

Ever Experienced Trauma

		Frequency	Percent
Valid	**Don't Know**	1	.7
	No	34	24.3
	Yes	105	75.0
	Total	140	100.0

Experienced Trauma by Hispanic Ethnicity Crosstabs

			Ever Experienced Trauma			
			Don't Know	**No**	**Yes**	**Total**
Hispanic Ethnicity	**Not Hispanic**	**Count**	1	4	21	26
		%	3.8%	15.4%	80.8%	100.0%
	Central American	**Count**	0	2	3	5
		%	0.0%	40.0%	60.0%	100.0%
	Dominican	**Count**	0	0	1	1
		%	0.0%	0.0%	100.0%	100.0%
	Mexican	**Count**	0	27	75	102
		%	0.0%	26.5%	73.5%	100.0%
	Puerto Rican	**Count**	0	1	4	5
		%	0.0%	20.0%	80.0%	100.0%
	Other	**Count**	0	0	1	1
		%	0.0%	0.0%	100.0%	100.0%
Total		**Count**	1	34	105	140
		%	0.7%	24.3%	75.0%	100.0%

Among participants, 75% of participants (n=105) have ever experienced violence or trauma in any setting including community or school violence; domestic violence; physical, psychological, or sexual maltreatment/assault within or outside of the family; natural disaster; terrorism; neglect; or trauma. 73.5% (n=75) of those identifying with Mexican origin or ancestry indicated having ever experienced trauma, followed by 80.8% (n=21) of those who did not

identify as Hispanic, 80.0% (n=4) of those identifying with Puerto Rican origin or ancestry, 60% (n=3) of those identifying with Central American origin or ancestry, and 100% (n=1) of those identifying with Dominican origin or ancestry.

Experiences of Trauma and Children

Hypothesis 1: *PPW from the El Paso, Texas area with SUD/OUD and/or COD SMI who have experienced trauma are more likely to already have children and a higher number of children than those who have not experienced trauma.*

Table 7

Experiences of Trauma and Number of Children

Crosstab Ever Experienced Trauma * Number of Children

			How many children do you have?								Total
			1	2	3	4	5	6	7	8	
Ever Experienced Trauma	Don't Know	Count	1	0	0	0	0	0	0	0	1
		%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	No	Count	11	9	2	4	1	5	1	1	34
		%	32.4%	26.5%	5.9%	11.8%	2.9%	14.7%	2.9%	2.9%	100.0%
	Yes	Count	25	28	22	11	10	2	2	0	100
		%	25.0%	28.0%	22.0%	11.0%	10.0%	2.0%	2.0%	0.0%	100.0%
Total		Count	37	37	24	15	11	7	3	1	135
		%	27.4%	27.4%	17.8%	11.1%	8.1%	5.2%	2.2%	0.7%	100.0%

Independent Samples Test
Number of Children * Ever Experienced Trauma
Group Statistics

	Ever Experienced Trauma	N	Mean	S. Deviation
How many children do you have?	No	34	2.97	2.110
	Yes	100	2.67	1.484
	Total	134		

Independent Samples Test

	t	df	Sig.(2-tailed)	Mean diff.
How many children do you have?	.768	44.613	.446	.301

Among 140 PPW with SUD/OUD and/or COD SMI, the percent of those who experienced trauma and already had children (74.1%) was not statistically different from those

who experienced trauma and did not already have children (100%) (p=.421). Among 134 valid responses from PPW with SUD/OUD and/or COD SMI, number of children among women who have not ever experienced trauma was not significantly different compared to the number of children among women who have ever experienced trauma (p=.446).

Experiences of Trauma and Housing Security

Hypothesis 2: PPW from the El Paso, Texas area with SUD/OUD and/or COD SMI who have experienced trauma are more likely to have experienced housing insecurity than those who have not experienced trauma.

Table 8

Experiences of Trauma and Housing Security

Crosstabs Ever Experienced Trauma * Past 30-day living situation

			Past 30-day living situation				
			Shelter	Street/Outdoors	Institution	Housed	Total
Ever Experienced Trauma	Don't Know	Count	0	0	0	1	1
		%	0.0%	0.0%	0.0%	100.0%	100.0%
	No	Count	1	0	0	33	34
		%	2.9%	0.0%	0.0%	97.1%	100.0%
	Yes	Count	9	3	17	76	105
		%	8.6%	2.9%	16.2%	72.4%	100.0%
Total		Count	10	3	17	110	140
			7.1%	2.1%	12.1%	78.6%	100.0%

Chi-Square Test	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.928[a]	6	.128
N of Valid Cases	140		

a. 8 cells (66.7%) have expected count less than 5. The minimum expected count is .02.

Among 140 PPW with SUD/OUD and/or COD SMI the proportion of those having ever experienced trauma and past 30-day living arrangements does not differ from those who have not experienced trauma (p=.128). 78.6% of total participants regardless of ever experienced trauma

status indicated that they were housed including 97.1% of those who had not experienced trauma and 72.4% of those who had experienced trauma.

Experiences of Trauma and Income

Hypothesis 3: PPW from the El Paso, Texas area with SUD/OUD and/or COD SMI who have experienced trauma are less likely to have enough money to meet their needs than those who have not experienced trauma.

Table 9

Experiences of Trauma and Income

Ever Experienced Trauma * Enough Money to Meet Needs Crosstabulation

			Enough money to meet needs						Total
			Missing Data	Not at all	A little	Moderately	Mostly	Completely	
Ever Experienced Trauma	Don't Know	Count	0	1	0	0	0	0	1
		%	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	100.0%
	No	Count	0	15	7	1	8	3	34
		%	0.0%	44.1%	20.6%	2.9%	23.5%	8.8%	100.0%
	Yes	Count	1	41	26	14	14	9	105
		%	1.0%	39.0%	24.8%	13.3%	13.3%	8.6%	100.0%
Total		Count	1	57	33	15	22	12	140
		%	0.7%	40.7%	23.6%	10.7%	15.7%	8.6%	100.0%

Chi-Square Test

	Value	df	Asymp. Sig (2-sided)
Pearson Chi-Square	6.435[a]	10	.778
N of Valid Cases	140		

a. 10 cells (55.6%) have expected count less than 5. The minimum expected count is .01.

Mann-Whitney Test

Experiences of Trauma * Total Income

Ranks

Ever Experienced Trauma		N	Mean Rank	Sum of Ranks
Total Income	No	34	73.74	2507.00
	Yes	105	68.79	7223.00

Total Income 5-point Summary	
Mean	361.43
Median	200.00

	Total	139	**Std. Deviation**	460.05
			Minimum	.00
			Maximum	3000.00

Test Statistics [a]

	Total Income
Mann-Whitney U	1658.000
Z	-.631
Asymp. Sig. (2-tailed)	.528

a. Grouping Variable: Ever Experienced Trauma

Among 140 PPW with SUD/OUD and/or COD SMI, the proportion of those who ever experienced trauma and having enough money to meet needs did not differ from those who have not experienced trauma (p=.778). Among 139 valid responses from PPW with SUD/OUD and/or COD SMI, there was no significant difference between those who have not ever experienced trauma and total income (mean rank=73.74) compared with those who had ever experienced trauma (mean rank=68.79, p=.528).

Discussion

This study assessed trauma and social determinants of health among PPW with SUD/OUD and/or COD SMI in the El Paso, TX area. Findings from this study help us better understand trauma and social determinants of health and SUD/OUD and/or COD SMI among this unique border population and adds to the literature about border health along the US-MX border.

81.4% of participants identified as having Hispanic ethnicity with 72.9% of participants identified as having Mexican origin or ancestry. This is not surprising for the area based on census data and adds to one of the strengths of this paper in understanding predominantly Mexican populations in the United States. Serving predominantly Latino populations in SUD/OUD and mental health care is important in addressing these health needs among Latino youth who have shown higher rates of suicidality impacted by social determinants of health including lower socioeconomic status, higher locational stress, and higher acculturative stress (Canino and Roberts, 2001, Silva and Van Orden, 2018).

Among participants, 92.9% were screened positive for a COD of either co-occurring SUD/OUD diagnoses or a COD SMI. Participants also had 52.1% cocaine and other stimulant use disorder on par with national averages of stimulant use disorder among SUD diagnoses at 50.4% (NSDUH, 2019). Opioid use disorder was found in 13.6% of participants compared with national averages at 46.6% of users. Addressing cocaine use disorder among parents may decrease experiences of dysfunctional parenting and chaotic home environments that are associated with cocaine use (Forray and Foster, 2015). Treating pregnant women with opioid use disorder utilizing MAT may prevent NAS among infants born to women who use opioids while pregnant (Wilder et al., 2017). PPW programs that include MAT and trauma-informed care may

alleviate a lack of pharmacologic or psychotherapeutic care for PPW with SUD/OUD and/or COD SMI (Renbarger et al., 2020).

There is a disparity in care for African American and Hispanic women in addressing mental health needs (Coleman-Cowger, 2012) which could be alleviated by providing programs such as this in areas with majority minority populations such as the El Paso, TX area is for Hispanic/Latina women. Depression and substance use treatment is lower in women than in their male counterparts, and pregnant women often do not seek help (Coleman-Cowger, 2012). All of the participants in this program were enrolled in a women's residential treatment facility, thus indicating that these participants had the agency to seek treatment for SUD/OUD and/or COD SMI. Considering the disparities in access to care and treatment for Latina women in the United States and the lack of PPW substance use and mental health help seeking behavior (Coleman-Cowger, 2012), the ability to seek and remain in treatment for SUD/OUD and/or SMI is an important area for further research among this population.

Within the study population, 75% (n=105) had ever experienced trauma, which is a salient risk factor for substance use (Dworkin et al., 2017; Hruska et al., 2014; Charles et al., 2015), this adds to the existing literature that supports the need for trauma-informed care. Because the variable for trauma assesses community or school violence; domestic violence; physical, psychological, or sexual maltreatment/assault within or outside of the family; natural disaster; terrorism; neglect; or traumatic grief, it could be advised that trauma informed care works from a social-ecological approach (Bonar et al., 2021; Maina et al., 2021; Whitesell et al., 2013). Trauma informed care aligns with holistic health models that have shown to be beneficial for women enrolled in residential treatment programs that address CODs and related factors (Bray et al., 2022; Kuo, 2013). Maternal trauma might influence a mother's ability to parent that

could result in relational trauma for the child (Fortuna et al., 2019). Trauma informed care in SUD/OUD treatment may also help reduce the risks for children of PPW with SUD/OUD and/or COD SMI, including the bloodborne illnesses, child development, behavioral issues, and likelihood for abuse (Wilder et al, 2015; Kuo, 2013; Renbarger et al., 2020). With 96.4% of women in this population already having children and about 72.5% having multiple children, facilitating care that addresses social determinants of health that pose risks for mothers and their children should be a priority when serving mothers with SUD/OUD and/or COD SMI.

Because this is a program designed for PPW, all participants either already had children or were pregnant. 26.4% had 1 child and about 69.9% had more than one child ranging from 2-8 children. 30.7% of participants indicated they were currently pregnant (Appendix 3). PPW programs are important because they provide specialized care for PPW with SUD/OUD and/or COD SMI during and after pregnancy. These programs can help fill known treatment gaps for both SUD/OUD and SMI (Le Strat et al., 2011; Coleman-Cowger, 2012). Although there were no observed relationships between number of children and experiences of trauma in this population, programs like this along the US-MX border provide care for Latina women, who face salient barriers to treatment due to multiple marginalities stemming from provider stereotypes around Latinas culturally, and within broader contexts in the United States and stereotypes about pregnant women or mothers who have SUD/OUD and need treatment (Le Strat et al., 2011; Wilder et al., 2017). These programs also have implications for child wellbeing, with the MIRRORS program in Texas showing improved levels of family functioning and parenting and decreased levels of substance use among the participants who enrolled in the program (Bray et al., 2022). Reduced substance use by mothers may also decrease adverse psychosocial outcomes for children who may have less experiences of maltreatment, less

experiences of financial instability or poverty, less experiences of children being removed from the home, and less feelings of loneliness (Azimi and Connolly, 2022; Bray et al., 2022; Wilder et al., 2015; Kramlich et al., 2018) that may result from parental substance use. Trauma-informed care may also improve the development of healthy attachment between mother and child, with mothers who have experienced trauma having more difficulty in parenting (Fortuna et al., 2019).

Socioeconomic status and economic insecurity were a salient factor within this population with 90.7% of participants reporting not having enough money to completely meet their needs and 64.3% reporting less than moderately enough money to meet their needs with the mean of past month income at $361.43. Low-income status acts as a stressor that impacts stress-coping behaviors and acts as a social determinant of health that limits employment opportunity and access to services (Meyer et al., 2008; Oh et al., 2018). Thus, addressing socioeconomic needs among PPW with SUD/OUD and/or COD SMI is important in treatment for SUD/OUD. Although there was no observed relationship between trauma and past month income in this population, low income is one of several psychosocial challenges PPW with SUD/OUD and/or COD SMI face (Mattocks et al., 2017) and trauma-informed care as seen in the MIRRORS program in Texas was seen by participants as beneficial in their successful outcomes (Bray et al., 2022). A mean past-month income of $361.43, a median past month income of $200.00 and a minimum past month income of $0.00 places many of these women well below the average annual per-capita income for the region at $21,683 according to Census data (U.S. Census, 2020).

Housing insecurity is another social determinant of health that impacts PPW with SUD/OUD and/or COD SMI (Livingston et al., 2011; Bray et al., 2022; Meinhofer et al., 2020). 21.4% of participants indicated they were unhoused in the past 30 days and were living in a

shelter, an institution, or on the street. 40% of participants indicated they were housed but living in someone else's apartment, room, or house. 30% of respondents indicated they were housed in their own apartment, room, or house. Addressing housing insecurity can help alleviate cycles of substance use and housing insecurity that exacerbate the social needs of PPW with SUD/OUD and/or COD SMI (Livingston et al., 2011). Although there were no observed relationships between experiences of trauma and housing insecurity within this population, addressing housing insecurity is still important for the nearly 60% of participants who do not own or rent their own apartment, room, or house.

An area for further exploration is the role of familism in Mexican-American populations (Agoff et al., 2021) and the role families may play in supporting Mexican-American and other Latina PPW with SUD/OUD and/or COD SMI in the region despite SUD/OUD stigmatization that occurs within Latino populations (Markowski et al., 2021; Williams and Nida, 2011). The relationship between the 40% of participants living with someone else and who they were living with was not measured in the GPRA. Exploring familial support networks within the population may yield results that are usable in treatment and intervention for SUD/OUD and/or COD SMI and the social determinants of health shaping these health outcomes within this population.

Implications

While this study did not find relationships between experiences of trauma and number of children, housing insecurity, and socioeconomic status, it did highlight the importance of several social determinants of health that impact PPW with SUD/OUD and/or COD SMI among participants enrolled in a women's residential treatment program in the El Paso area. These findings can be mapped using the social-ecological model domains.

Findings from this study suggest that in the individual domain of the social-ecological model a majority of the women enrolled in this program had ever experienced trauma and had co-occurring SUD/OUD and/or SMI. These findings highlight the need for comprehensive, holistic approaches in the treatment of PPW with SUD/OUD and/or COD SMI that are trauma-informed and, meet the pharmacological and psychotherapeutic needs of the women enrolled in the program. These findings also align with the Healthy Border 2020 Maternal Mortality objectives to increase access to prenatal care including appropriate screenings, in this case for SUD/OUD and/or COD SMI in PPW, and to encourage the development of healthy behaviors in women of reproductive age. Study findings may have implications related to the Healthy Border 2020 Mental Health objectives to reduce illicit drug use and to maintain or reduce prevalence of depression.

Trauma may also be classified in the relational domain along the social ecological model if that trauma included interpersonal violence. These findings have implications for the advocacy of trauma-informed care in alignment with the Healthy Border 2020 Mental Health goal to increase medical and psychological care provided to victims of family violence. Because these women are enrolled in a treatment facility that incorporates a trauma-informed approach, they are receiving treatment associated with their experiences of trauma and SUD/OUD and/or COD SMI. This also has implications for improved familial relationships, particularly between mother and child, for those enrolled in the program as found in the MIRRORS program in Texas (Bray et al., 2022).

The community domain of the social-ecological model includes social norms and behaviors, and experiences within the community. This PPW program addresses the need for Latina women to engage in SUD/OUD and/or COD SMI treatment and interventions.

Stigmatization of substance use among Latino communities may deter Latina PPW from seeking care for these health outcomes (Henderson and Dressler, 2017). Gendered differences in the acceptability of substance use within Latino cultures may also deter Latina women from seeking care (Agoff et al., 2021). With a majority of participants enrolled in the program identifying as Hispanic, these findings suggest that programs like these may be necessary in majority minority areas to address health disparities in access to treatment for PPW with SUD/OUD and COD SMI. Specialized programs for these populations may also decrease adverse treatment experiences among PPW with SUD/OUD and/or COD SMI (Renbarger et al., 2020) by providing a treatment setting that prioritizes their experiences and needs.

In the social domain of the social-ecological model we find factors that imply structural vulnerability. Trauma may be found within this domain in the form of structural violence, community violence, and school violence. Housing insecurity, and lower socioeconomic status also contribute to structural vulnerability within this domain. With 90.7% of respondents indicating they do not completely have enough money to meet their needs and looking at the prominent sources of income for this population (Appendix 2), we can see that the participants in this study face economic instability. Furthermore, with about 70% of participants who do not own or rent their own apartment, room, or house, we can see that this population also experiences housing insecurity. SUD/OUD stigmatization may impact employment and housing opportunities (Livingston et al., 2011). Based on findings from the MIRRORS program (Bray et al., 2022) and the findings presented here, addressing social risk factors including economic stability and housing security is crucial in addressing the needs of this population and that participation in PPW programs have been implicated as improving the successful outcomes of

their participants (Bray et al., 2022). Thus, these findings allude to the importance of continuing programs like these to improve the social outcomes of PPW with SUD/OUD and/or COD SMI.

Strengths and Limitations

This study assessed relationships between trauma and social determinants of health among PPW with SUD/OUD and/or COD SMI in the El Paso, TX area. One strength of this study is that the El Paso area is a unique region with a majority Mexican-American population. This study leverages the unique population demographics of the region to study the aforementioned relationships among Hispanic/Latino PPW with SUD/OUD and/or COD SMI living along the US-MX border, a population with sparse literature in this specific area. Another strength of the study is that the participants are PPW with SUD/OUD who had the agency to seek and/or remain in treatment. This may also be a limitation to the study because the participants of the study are enrolled in a treatment program for SUD/OUD and/or COD SMI. Thus, this study may not pick up on important relationships between trauma and social determinants of health among PPW with SUD/OUD and/or COD SMI who have not sought or received treatment. Statements about Hispanic/Latino PPW in the United States with SUD/OUD and/or COD SMI may not be generalizable to all Hispanic groups based on the results of this study. This study may also be limited by biases that occur in the survey process, including, but not limited to, social desirability and recall biases that may influence how participants respond to the survey. Another limitation comes from the interpretation of the results. The chi-square analyses could be interpreted inversely, with “ever experienced trauma” as the dependent variable. This analysis was beyond the scope of analysis for the proposed project, and thus was left out and only analysis with “ever experienced trauma” as the independent variable in all tests was done. Another limitation exists in the data collection between the variable timespan of “ever

experienced trauma" to the more recent timeframe of "past 30-day living situation" and "past 30-day income." There may be differences between these variables for participants who experienced trauma as defined by the variable more recently verses those who have experienced trauma as defined by the variable in the past. The "ever experienced trauma" variable also does not account for the number of/frequency of traumatic experiences over the life course.

Conclusions

This study found no statistically significant relationships between experiences of trauma and number of children, housing insecurity, or income among PPW with SUD/OUD and/or COD SMI enrolled in a women's residential treatment facility in the El Paso, TX area. This study did find that 90.7% of participants had SUD/OUD and/or COD SMI, 75% of participants had ever experienced trauma, and about 27.6% of participants were unhoused. These findings indicate a continued need for trauma informed care among PPW with SUD/OUD and/or COD SMI that is holistic and addresses the varying psychosocial needs of this population.

IRB Approval

This secondary analysis protocol was submitted for IRB approval from the University of Texas at El Paso Institutional Review Board (IRB) and received exempt status under 45 CFR 46.104(d)(4)(ii) on February 21, 2023.

MPH Program Foundational Competencies

This study shows proficiency by the MPH candidate in the MPH Program Foundational Competencies. Evidence-based approaches to public health are utilized through the selection of quantitative data analysis and interpretation methods from a survey conducted by the parent study. Public health and health care systems and systems thinking are present through the social determinants of health and social ecological model frameworks that were chosen to guide this study. This study also assessed population needs in addressing trauma and social determinants of health for PPW with SUD/OUD and/or COD SMI. The communication competency is achieved through the writing and presentation of the study. Interprofessional practice is evidenced through the collaborative efforts between this study and the parent study community partner.

A. Evidence-based Approaches to Public Health

A.2. Select quantitative and qualitative data collection methods appropriate for a given public health context.

A.3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming, and software, as appropriate.

A.4. Interpret results of data analysis for public health research, policy, or practice

B. Public Health and Health Care Systems.

B.6. Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels.

C. Planning and Management to Promote Health

C.7. Assess population needs, assets and capacities that affect community health.

F. Communication

F. 19. Communicate audience-appropriate public health content, both in writing and through oral presentation.

G. Interprofessional Practice

G. 21. Perform effectively on interprofessional teams.

H. Systems Thinking

H. 22. Apply systems thinking tools to a public health issue.

MPH Program Hispanic and Border Health Concentration Competencies

This study utilizes several of the MPH Program Hispanic and Border Health Concentration Competencies. Principles of prevention and control of disease are shown through identifying how social determinants of health along a social ecological model are connected to mental health outcomes. The context of this study in the El Paso, TX area describes these factors and outcomes in a border community context.

1. State the principles of prevention and control of disease, and discuss how these can be modified to accommodate cultural values and practices in Hispanic and border communities

3. Differentiate quantitative health indicators in major communicable and non-communicable diseases in Hispanic and US/Mexico border vs. non-border communities.

5. Distinguish health differences from health disparities on the US/Mexico border and using the Toolkit for Community Action (National Partnership for Action to End Health Disparities) develop action plans for community prevention and intervention.

Strategic Frameworks

This study is guided by multiple strategic frameworks. Foremost is the Social Ecological Model to understand how trauma is associated with social determinants of health among PPW with SUD/OUD and/or COD SMI. This study also uses frameworks from Healthy People 2030 and Healthy Border 2020 to identify and contextualize factors associated with SUD/OUD and/or COD SMI among PPW in the El Paso, TX area. This knowledge may contribute to efforts to reduce incidence of SUD/OUD and SMI outcomes among this distinct population.

1. Social Ecological Model – a strategic framework to understand and address factors across individual, relational, community, and societal factors that influence health outcomes (CDC, 2022)

2. Healthy People 2030 SU-01 – Increase the proportion of people with a SUD who got treatment in the past year

3. Healthy People 2030 MICH-11 – Increase abstinence from alcohol among pregnant women

4. Healthy People 2030 MICH-11 – Increase abstinence from illicit drugs among pregnant women

5. Healthy Border 2020 Maternal and Child Health Objectives

- Maternal Mortality
    - Increase access to prenatal care including appropriate screenings, particularly in rural areas.
    - Encourage development of healthy behaviors in women of reproductive age

6. Healthy Border 2020 Mental Health: Addiction Objectives

- Reduce illicit drug use.

7. Healthy Border 2020 Mental Health: Depression and Violence

- Depression
    - Maintain or reduce prevalence of depression baseline 2011.
- Violence
    - Increase medical and psychological care provided to victims of severe family violence by 10%.

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Appendix

Appendix 1

		Frequency	Percent
Valid	Female	140	100.0

		Frequency	Percent
Valid	Asian	1	.7
	American Indian	7	5.0
	Native Hawaiian	1	.7
	Alaska Native	3	2.1
	White	114	81.4
	Black	3	2.1
	Total	129	92.1
Missing	System	11	7.9
Total	140	100.0	

		Frequency	Percent
Valid	Not Hispanic	26	18.6
	Central American	5	3.6
	Dominican	1	.7
	Mexican	102	72.9
	Puerto Rican	5	3.6
	Other	1	.7
	Total	140	100.0

Appendix 2

Table 10

Income

Enough Money to Meet Needs

		Frequency	Percent
Valid	Missing	1	.7
	Not at all	57	40.7
	A little	33	23.6
	Moderately	15	10.7
	Mostly	22	15.7
	Completely	12	8.6
	Total	140	100.0

Sources of Income

		Wage Income	Public Assistance	Retirement	Disability	Non-legal Income	Income from Family and/or Friends	Other
N	Valid	140	140	140	140	140	140	140
	Missing	0	0	0	0	0	0	0
Mean		23.04	226.19	.00	49.06	.43	62.71	31.22
Median		.00	130.00	.00	.00	.00	.00	.00
Std. Deviation		137.980	278.001	.000	191.928	5.071	299.969	131.404
Skewness		6.962	1.163		3.866	11.832	7.912	4.749
Minimum		0	0	0	0	0	0	0
Maximum		1200	1215	0	1000	60	3000	840

Total Income

N	Valid	140
	Missing	0
Mean		361.43
Median		200.00
Std. Deviation		460.05
Skewness		2.444
Minimum		.00
Maximum		3000.00

Appendix 3

Table 11

Number of Children

		Frequency	Percent
Valid	No	5	3.6
	Yes	135	96.4
	Total	140	100.0
N	Valid	135	
	Missing	5	
Mean		2.73	
Median		2.00	
Std. Deviation		1.663	
Skewness		.948	
Minimum		1	
Maximum		8	

		Frequency	Percent
Valid	1	37	26.4
	2	37	26.4
	3	24	17.1
	4	15	10.7
	5	11	7.9
	6	7	5.0
	7	3	2.1
	8	1	.7
	Total	135	96.4
Missing	N/A	5	3.6
Total		140	100.0

		Frequency	Percent
Valid	No	89	63.6
	Yes	43	30.7
	Total	132	94.3
Missing	Don't Know	7	5.0
	Refused	1	.7
	Total	8	5.7
Total		140	100.0

Appendix 4

Table 12

Experiences of Trauma

Ever Experienced Trauma

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Don't Know	1	.7	.7	.7
	No	34	24.3	24.3	25.0
	Yes	105	75.0	75.0	100.0
	Total	140	100.0	100.0	

Experienced Trauma by Race

Crosstabs

			Ever Experienced Trauma			
			Don't Know	No	Yes	Total
Race	Asian	Count	1	0	0	1
		%	100.0%	0.0%	0.0%	100.0%
	American Indian	Count	0	3	4	7
		%	0.0%	42.9%	57.1%	100.0%
	Native Hawaiian	Count	0	0	1	1
		%	0.0%	0.0%	100.0%	100.0%
	Alaska Native	Count	0	1	2	3
		%	0.0%	33.3%	66.7%	100.0%
	White	Count	0	29	85	114
		%	0.0%	25.4%	74.6%	100.0%
	Black	Count	0	0	3	3
		%	0.0%	0.0%	100.0%	100.0%
Total		Count	1	33	95	129
		%	0.8%	25.6%	73.6%	100.0%

Chi Square Test

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	131.573[a]	10	<.001
N of Valid Cases	129		

a. 15 cells (83.3%) have expected count less than 5. The minimum expected count is .01.

Experienced Trauma by Hispanic Ethnicity

Crosstabs

	Ever Experienced Trauma			
	Don't Know	No	Yes	Total

Hispanic Ethnicity	Not Hispanic	Count	1	4	21	26
		% within Hispanic Ethnicity	3.8%	15.4%	80.8%	100.0%
	Central American	Count	0	2	3	5
		%	0.0%	40.0%	60.0%	100.0%
	Dominican	Count	0	0	1	1
		%	0.0%	0.0%	100.0%	100.0%
	Mexican	Count	0	27	75	102
		%	0.0%	26.5%	73.5%	100.0%
	Puerto Rican	Count	0	1	4	5
		%	0.0%	20.0%	80.0%	100.0%
	Other	Count	0	0	1	1
		%	0.0%	0.0%	100.0%	100.0%
Total		Count	1	34	105	140
		%	0.7%	24.3%	75.0%	100.0%

Chi Square Test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.943[a]	10	.731
N of Valid Cases	140		

a. 14 cells (77.8%) have expected count less than 5. The minimum expected count is .01.

Vita

Adren Warling received his Bachelor of Arts degree in Anthropology with a minor in Women's and Gender Studies and a Certificate in Applied Anthropology from the University of Texas at El Paso in May of 2020. After completion of his Bachelor of Arts degree, Adren continued his education and received a Master of Public Health degree with a concentration in Hispanic and Border Health from the University of Texas at El Paso in May of 2023. During his time as a Master of Public Health student, Adren worked as a teaching assistant for class "HSCI 3305: Substance Abuse" with Dr. Robert Anders and for class "HSCI 4307: Health Promotion Planning and Implementation" with Dr. Jeannie Concha. Adren also worked as a Congressional Intern at the Office of Rep. Veronica Escobar for two semesters. During this time, Adren also worked as a co-coder and analyst in collaboration with Dr. Penelope Morrison out of Penn State New Kensington investigating the psychosocial health needs of intimate partner violent men enrolled in a batterer intervention program. From this research, a paper was published in 2022 titled "Partner Violent Men's Perspectives on the Factors That They Believe Contributed to Their Abusive Behavior" (DOI: https://doi.org/10.1177/10778012221134827). Adren also worked as a graduate research assistant for the Minority AIDS Research Center housed out of the University of Texas at El Paso under the Rural Communities Opioid Response Program – Implementation grant under the direction of Dr. Thenral Mangadu.

Upon completion of his MPH degree, Adren intends to continue higher education in the pursuit of a Doctor of Philosophy degree in a health-sciences related program broadening his research experiences in social determinants of health, health policy, and substance use disorder along the US-MX border, nationally within the United States, and internationally.