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Prescription Drug Misuse in Racial and Ethnic Minorities: Prevalence and Predictors

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by

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Each person whose signature appears below certifies that this doctoral project in his/her opinion is adequate, in scope and quality, as a dissertation for the degree Doctor of Psychology.

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CONTENT

ABBREVIATIONS

PDM	Prescription Drug Misuse
REM	Racial and Ethnic Minorities
MAT	Medically Assisted Treatment
CBT	Cognitive-Behavioral Therapy
POM	Prescription Opioid Misuse
PSM	Prescription Stimulant Misuse
CNS	Central Nervous System
SAMHSA	Substance Abuse and Mental Health Services Administration
NIDA	National Institute on Drug Abuse
CDC	Center for Disease Control
ADHD	Attention-Deficit Hyperactivity Disorder
NSDUH	National Survey on Drug Use and Health
LGB	Lesbian, Gay, and Bisexual individuals
OUD	Opioid Use Disorder
MIP	Message Interpretation Processing

ABSTRACT OF THE DOCTORAL PROJECT

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by

Valerie Watts

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Dr. Bridgette J. Peteet, Chairperson

The United States (U.S.) is currently facing a complex epidemic of prescription drug misuse (PDM). Previous literature lacks information on the prevalence of PDM in racial and ethnic minorities (REM) and associated precipitating variables. The current review aims to build upon the limited research regarding REM engagement in PDM and the associated variables. This examination identified and summarized: 1) contemporary research on the prevalence of PDM in REM, 2) major variables associated with PDM in this subpopulation, and 3) current evidence-based treatments for PDM. The review revealed mixed results related to the prevalence of PDM in REM. Previous research believed the PDM epidemic to be dominated by White individuals, more recent research supports increased instances of PDM among REM. Recent national surveys found REM PDM to be increased and, in some instances, equal to- or higher than White individuals PDM. Major predictors related to PDM include residential instability, rural living, and perceived discrimination. REMs are also exposed to increased substance use health disparities and are at risk of experiencing negative PDM outcomes. Attitudes related to PDM were found to be positive or neutral. The relationship between exposure to PDM media and attitudes needs further research as PDM exposure continues to increase in

media. Across PDM treatment, Cognitive Behavioral Therapy (CBT) was found to be the most common treatment. Involvement of REM in PDM research highlights the continued importance of increased inclusion of REM individuals within PDM research, examination of relevant psychosocial variables, and further assessment of treatment efficacy for REMs.

CHAPTER ONE

INTRODUCTION

Over the past three decades, the U.S. has been battling a complex and multi-faceted prescription drug misuse (PDM) epidemic (DuPont, 2010; Prescription Drug Abuse Subcommittee, 2013). In 2018 alone, an estimated 16.9 million individuals engaged in PDM at least one time (Substance Abuse and Mental Health Services Administration [SAMSHA], 2019). Much of the preexisting literature that has representational data found that racial/ethnic minorities (REM) engage in PDM less than Whites (Fogel & Shlivko, 2016; Martins et al., 2015; McCabe et al., 2019; McCabe et al., 2014; Varga, 2012); however, some findings indicate comparable rates of use across races (Vaughn et al., 2016). REMs are underrepresented in substance abuse research. They also have restricted access and limited engagement in treatment (Guerrero et al., 2015). Thus, despite lower or similar PDM prevalence, African American and Hispanic individuals experienced a higher rate of opioid prescription death rates in 2016 and 2017 (Kennedy, 2019). This supports arguments that there is limited knowledge surrounding REM incidence, prevalence, and correlates of PDM (Ford & Rigg, 2015; Peteet, 2017). The current review will add to the limited body of research focusing on the prevalence and incidence of PDM in REM.

Prescription medications are considered “misused” when an individual takes their medicine in a way or dose other than what was prescribed, if an individual takes someone else’s medication, or if the medicine is only taken for the euphoric effect that it causes (National Institute on Drug Abuse [NIDA], 2020a). The three most commonly misused

prescription drugs include opioids; stimulants; and central nervous system (CNS) depressants, more commonly known as tranquilizers, sedatives, and anxiolytics (NIDA, 2020a).

Commonly Abused Prescription Drugs

Prescription Opioids

Out of all the prescription drugs, opioids continue to be the most abused and have the highest mortality rate (Hill & Thomas, 2020). Prescription opioids were involved in approximately 70% of drug overdose deaths in 2018 (Wilson, 2020). The surge of opioid use began in the late 1990s and was initiated by pharmaceutical companies informing the medical community that opioids were safe to use and did not have addictive properties that would lead to substance use disorders or potential overdose (NIDA, 2020b). This belief was swiftly discredited as opioid overdose rates increased at alarming rates. According to the Center for Disease Control (CDC), more than 232,000 individuals in the U.S. have died due to a prescription opioid overdose between 1999 and 2018 (CDC, 2019).

Prescription opioids include three classes of drug that relax the body and relieve pain These classes include natural opiates, semi-synthetic opioids, and fully synthetic opioids (Pineland Recovery Center of Medford, n.d.; NIDA, 2020c). Natural opiates are derived from the opium poppy plant and include morphine and codeine. Semi-synthetic and fully synthetic opioids include drugs like oxycodone, hydrocodone, fentanyl and methadone. Synthetic opioids differ from natural opioids as they do not require cultivation, can be produced faster, often have high potencies, and can be provided at

lower costs. While there are benefits to synthetic opioids, they also come with increased risks including higher risk of overdose; possible vein damage; and similar negative affects associated with natural opioids such as lethargy, nausea, itching, constipation, loss of consciousness, or coma (BAART Programs, 2019). Of the prescription opioids, hydrocodone and oxycodone, brand names Vicodin, and OxyContin or Percocet, respectively are most commonly prescribed to patients to help reduce their pain (NIDA, 2020c).

Prescription opioids pose an increased risk for misuse as individuals can easily develop a tolerance to the medication, therefore leading to medication misuse at a faster rate (Pergolizzi et al., 2012). Beyond their pain-relieving purposes, prescription opioids can also be used for recreational purposes, such as to get high. It has also been reported that college students are more likely to misuse prescription opioids to help enhance their social function (Quintero, 2009, 2012). Individuals will also misuse prescription opioids by mixing them with alcohol or soda. This mix of soda or alcohol with prescription strength cough syrup containing codeine has often been called "*purple drink*," "*syrup*," "*sizzurp*," or "*lean*" and is prevalent among African American youth (Quintero, 2012). Increased opioid use has been found to have a significant relationship with later increased misuse of anxiolytics and sedatives, such as benzodiazepines (McLarnon et al., 2014; Sun et al., 2017). Even with programs in place to decrease prescription opioid misuse (POM), in the past year it was estimated that 9.9 million people, aged 12 or older, engaged in POM (CDC, 2019; Substance Abuse and Mental Health Services Administration [SAMHSA], 2019).

Prescription Stimulants

Prescription stimulants are regularly considered the second most abused prescription drug. According to SAMHSA (2019), 5.1 million people over 12 years old have misused prescription stimulants in the past year. Prescription stimulants consist of medicines that are prescribed to individuals to treat Attention-Deficit Hyperactivity Disorder (ADHD) or narcolepsy. These drugs are used to increase attention, alertness, and energy in those who have these disorders. Currently the most common prescription stimulants are dextroamphetamine, methylphenidate, and a dextroamphetamine amphetamine combination product. These are more commonly known by their brand names Dexedrine, Ritalin, and Adderall, respectively (NIDA, 2018b).

Weyandt et al. (2016) reviewed current literature regarding prescription stimulant misuse (PSM) and found that PSM is increasing in college students, including those who are not diagnosed with ADHD or prescribed prescription stimulants. Some factors associated with PSM include a higher prevalence in young adults ages 18-25, identifying as male, White, a member of a fraternity or sorority in the U.S. college system, and lower overall GPA (Hyman, 2011; Weyandt et al., 2016). This runs counter to the prevalent beliefs that prescription stimulants are “cognitive enhancers” or “homework drugs” (Bossaer, 2013; Ford, 2009; Hyman, 2011).While the cognitive enhancing properties of prescription stimulants are not proven, working professionals and older adults have been reported to engage in PSM to increase productivity and offset cognitive decline (Hyman, 2011). Beyond their supposed academic performance enhancing qualities, prescription stimulants are used for a variety of reasons including recreationally to get high, to increase weight loss, or just because an individual is curious about the drug. Prescription stimulants

are often misused as individuals continue to chase the high that they provide when first used. This high is often followed by feelings of fatigue or depression which leads individuals to engage in continuous repeated dosing (Hill & Thomas, 2020).

Prescription CNS Depressants

CNS depressants, a class of prescription drugs that include anxiolytics, sedatives, and tranquilizers, are also reported to be a commonly misused class of prescription drugs (NIDA, 2019). These medications are typically prescribed for individuals experiencing anxiety or sleep disorders as they produce drowsy or calming effects (Weaver, 2015). Anxiolytic medications are often used by college students for recreational reasons such as to get high. Similar to prescription opioids, anxiolytics are often misused in concurrence with alcohol (Quintero, 2009; 2012). There is limited research around prescription tranquilizer and prescription sedative misuse. Prescription tranquilizer misuse (PTM) and prescription sedative misuse is higher in young adults and individuals who endorse POM or suicidal ideation (Schepis et al., 2018). Prescription sedatives are sometimes misused for the euphoric effects (Weaver, 2015). The previously mentioned “purple drink” can also include the popular prescription sedative promethazine, creating a more potent and dangerous mixture (NIDA, 2020d). The most commonly prescribed anxiolytics include benzodiazepines. More recognizable names of benzodiazepines include diazepam, alprazolam, and Clonazepam. These are known by their brand names Valium, Xanax, and Klonopin, respectively (NIDA, 2018a).

Benzodiazepines are at an increased risk of being misused as they are widely available through diversion locales such as the internet (Hill & Thomas, 2020). The

concurrent use of prescription opioids and prescription benzodiazepines has become a notable issue in recent years. According to (Sun et al., 2017), individuals who are concurrently using prescription opioids and benzodiazepines are at an increased risk of admission to inpatient care or emergency room visits for opioid overdose. Between 2001 to 2013 the percentage of people who were prescribed both drugs increased to 17% (NIDA, 2018a). More recently both opioids and benzodiazepines have been given FDA "black box" warnings highlighting the potential danger of using both drugs concurrently (NIDA, 2018a).

Diversion

Prescription drugs are easy to acquire as they can come from a variety of sources including a prescription from the doctor, diversion from friends and family, or purchased through illicit markets (McHugh et al., 2015). The current epidemic is particularly problematic as there are considerable negative effects that can emerge with continued PDM.

Prescription Drug Misuse and Associated Outcomes

The continued use of prescription drugs can lead to instances of abuse, addiction, increased emergency room visits, risky health and sexual behavior, overdose, or even death (Paulozzi et al., 2011; NIDA, 2020b; NIDA Blog Team, 2019). Research has also found continued PDM to be associated with significantly increased odds of alcohol, cannabis, and other drug use disorder problems (McCabe et al., 2019). By 2017, PDM had cost the nation $78.5 billion in healthcare, law enforcement, and lost productivity

(Volkow & Collins, 2017). In response to this growing crisis, policy makers have been working to curb these negative outcomes.

Prescription Drug Abuse Prevention

To help combat the PDM epidemic, state and federal policy and interventions have been created. These include increased public health surveillance, altered Food and Drug Administration regulations on prescribing practices, prescription drug monitoring programs, accessible proper disposal of prescription drugs, and educational programs for the public and healthcare workers (Brady et al., 2016; Maxwell, 2011). These represent exosystem level interventions based on Bronfenbrenner's Bioecological framework, which theorizes five tiers of bidirectional relationships between the individual and the surrounding environmental influences (Bronfenbrenner & Morris, 2007). The present review examines another exosystemic factor, exposure to PDM in entertainment and news mediums. While interventions have helped decrease the PDM epidemic on the exosystem level, use continues at alarming rates and media exposure is one possible explanation for these rates of misuse.

Prescription Drug Attitudes

Prescription drug attitudes play a significant role in determining an individual's likelihood to engage in PDM. The attitudes surrounding prescription drugs are often more lenient and positive than those of illicit drugs. In general, individuals believe that prescription medications have a lower perceived risk of harm and stigma. Prescription drugs are often obtained legally and are present in almost all households. Due to their

perceived safety and availability, peer and parental disapproval of PDM is lower than that of crack or cocaine (Fleary et al., 2013; McHugh et al., 2015). Most prescription drugs are believed to be more acceptable as there is typically legitimate reason for their use, such as to manage pain (Daniulaityte et al., 2012). In prior research, more positive attitudes towards prescription drugs have been found to be positively associated with increased PDM (Cabriales et al., 2013). Drug misuse, including PDM, is often positively depicted in the media. These depictions of drug use in the media have been found to increase individual's drug use, across various types of substances (Elmore et al., 2016; Fogel & Shlivko, 2016; Osberg et al., 2012). This increase in drug use, after viewing media featuring drug misuse, has been seen through direct effects of the media and through prescription drug attitudes.

Theoretical Perspective

To better understand how prescription drug attitudes play a role in determining an individual's likelihood to engage in PDM, researchers have considered the Theory of Planned Behavior (Bashirian et al., 2012; Cabriales et al., 2013; Hohman et al., 2014; Malewski, 2018). Originally proposed by Ajzen (1991), the Theory of Planned Behavior emphasizes the role that attitudes, related to a specific concept or behavior, can have towards an individual's future intentions and behaviors. Specifically, Ajzen (1991) explained that an individual's intention to perform a behavior can be accurately predicted by the attitudes they hold related to the behavior, subjective norms of those around them, and their own perceived behavioral control. Within this theory, an individual's attitudes interact directly with their subjective norms and perceived behavioral control to impact

their intention to perform the selected behavior. Previous studies implementing the Theory of Planned Behavior have found that attitudes and subjective norms regarding drug use were the most influential predictors in determining intention to engage in drug use (Bashirian et al., 2012; Hohman et al., 2014; Malewski, 2018). This specific connection between prescription drug attitudes and PDM has been briefly researched in current literature.

It has been found that positive and more liberal attitudes regarding prescription drugs is positively associated with increased prescription drug misuse (Cabriales et al., 2013). King et al. (2020) conducted research on the misuse of prescription stimulants in a college population and found that these liberal attitudes were a significant factor associated with increased PSM to promote wakefulness. Similarly, Malewski (2018) found that the attitudes held by individuals at moderate or high risk of addiction to prescription opioids increased their intention and likelihood towards feel good misuse. Specifically, as an individual's vulnerability and attitudes shift towards favoring misuse their likelihood to misuse increased. These attitudes towards prescription drugs and PDM are not completely determined by the individual alone but can be influenced by those around them. When peers and parents condone prescription drug use and misuse, adolescents are more likely to use (Ford, 2008). This relationship has specifically been seen in a study regarding POM, in which having close peers who engage in POM and an individual's perception of the accessibility of the prescription opioids was strongly related to POM (Partnership, 2014). Meisel and Goodie (2015) found that increased use among peers was associated with an individual being 1.4 times more likely to engage in PDM. Beyond typical outlets such as peer groups, family, and accessibility beliefs,

attitudes towards drug misuse can also be influenced by the media to which an individual is exposed.

Prescription Drug Misuse Treatment

When reviewing PDM and the associated variables, current evidence-based treatments are important to consider. Treatment of PDM varies across prescription opioids, stimulants, and central nervous depressants. Common treatments include pharmacotherapy, supervised detoxification, and various behavioral therapies (Bonhomme et al., 2012; NIDA 2020a, 2020e). Currently, there are mixed findings regarding the efficacy of PDM treatment for REMs (Barry et al., 2009; Montgomery et al., 2015; Stoner, 2018).

CHAPTER TWO

THE PRESENT REVIEW

In the current review, the PDM among REM, their observations of PDM in the media, their attitudes towards prescription drugs, and currently empirically supported treatments were reviewed. The review builds upon the limited research surrounding REM engagement in PDM and associated variables. Despite previous research and evidence of the disparities that REM individuals face, REM continue to be underrepresented in research (Waheed et al., 2015). Similarly, there is limited information published on the potential media influence of PDM directly addressing PDM. For this review, relevant information was collected on the presence of PDM in current media and how prescription drug use and the epidemic has been depicted. To provide further support regarding the potential media influence on PDM, literature was collected that studied the media influence of other popular drugs such as alcohol. Currently research supports that attitudes related to PDM are more lenient than those regarding illicit drug use (Fleary et al., 2013; McHugh et al., 2015). The review builds upon the research related to prescription drug attitudes to explore the relationship between prescription drug attitudes and media exposure to PDM.

Aims

The present review identified and summarized existing research on REM adult PDM, the major variables associated with this relationship, and current evidence-based treatments. Major variables include predictors of PDM, substance use health disparities,

PDM outcomes, and the relationships between prescription drug attitudes and media exposure to PDM. Key studies regarding the prevalence of prescription drug misuse in REM and relevant subtopics covered in the review have been derived from Peteet (2017).

This examination of existing research may aid in increasing the understanding around REMs' involvement in the current PDM epidemic. Existing reviews have extensively covered the relationship related to other drugs, such as alcohol, but PDM in REM remained relatively under reviewed. The current review further explored and provided additional support for the predictors, health disparities, and possible outcomes related to PDM in REM. From this review, researchers are able to gain continued insight into the PDM epidemic for REMs, the associated variables, and further development of evidence-based treatments for REMs experiencing PDM.

CHAPTER THREE

METHOD

Databases

For the present review, literature was collected from PubMed, APA PsycInfo, Google Scholar, and the Substance Abuse and Mental Health Services Administration Center for Behavioral Health Statistics and Quality (CBHSQ) database. Each of these were included as they are verified as top databases in the field. Each database mentioned provides overarching access to of the most relevant, prominent, and exhaustive journals on biomedical, psychology, and other health sciences. The literature search was conducted between the April and July of 2020. Additional articles were identified from suggested articles in the search databases and the references of identified articles if they met inclusion criteria described below.

Search Terms

This review focused on the three most commonly misused prescription drug classes: opioids, stimulants, and CNS depressants (NIDA, 2020a). Key search terms included these previously noted drug classes, as well as terms related to racial and ethnic minorities. REMs include racial and ethnic groups that are fewer in number or hold less privilege than the population of White individuals. For this review, REMs included African American, Latinx (gender neutral alternative to Latino/Latina), or Asian American individuals. Similarly, we were also interested in compiling relevant research related to prescription drug attitudes. Each of the drug classes and broad search terms

such as “attitudes” or “beliefs” were utilized for this review. Relevant literature regarding evidence-based treatments was collected by combining the various drug classes and “treatment” or “evidence-based treatment.”

Inclusion and Exclusion Criteria

Literature was eligible to be included in the study if it met multiple inclusion criteria. Initial criteria included being published within the U.S. and presented in English to ensure included information is relevant to the current PDM epidemic within the U.S. and able to be reviewed by this author. Included articles also needed to be published from academic, peer-reviewed sources and within the past 15 years. 15-year inclusion criteria was utilized to ensure that the information included within this review as research on PDM was limited prior to 2005 and research including REM was nonexistent. Within the “Prescription Drug Misuse in Racial and Ethnic Minorities” section and following sections reviewing literature relevant to REM, articles were excluded if they did not include a valid and representative sample of REM individuals. Valid and representative samples include those that are comprised of the same demographic proportions of racial groups as the nation or those that have large enough sample sizes of REMs to ensure power is met in their analyses.

CHAPTER FOUR

RESULTS

Prescription Drug Misuse in Racial and Ethnic Minorities

Across the current literature there have been mixed results regarding the PDM practices of REM. In some previous research, the PDM epidemic is considered to be dominated by White individuals and is not a significant issue in REM (Varga, 2012; Wang et al., 2013; Wu et al., 2010). In contradiction, other researchers have shown that there are not significant differences between the prevalence of White and REM individuals PDM, which indicates that REM have similar levels of PDM as White individuals (Bali et al., 2013; Kecojevic et al., 2015; S. S. Martins et al., 2015; McCabe et al., 2019; McCabe et al., 2014). In one study conducted by Watkins and Ford (2011), the nationwide survey, CPES, findings from 2002–2003 were utilized and found that among their respective ethnic groups, White individuals were most likely to engage in PDM (12.56%), followed by Hispanics (8.59%), African Americans (5.85%), and Asian Americans (5.66%). These data indicate that White individuals have the highest prevalence of PDM within their ethnic group, with approximately 12 percent of White participants marking that they misused prescription drugs. These percentages were notably lower for the other ethnic groups. Based off of the previous research findings, it would appear that PDM is not a problem of note for the REM community.

Conversely, recent nationwide surveys report that the prevalence of PDM in the REM community is increasing. While the differences in rates of prevalence were not statistically significant in the 2012 National Survey on Drug Use and Health (NSDUH),

Ford and Rigg (2015) found that past year POM was highest for African American adolescents compared to Hispanic and White adolescents. Another study which utilized the 2015 NSDUH results emphasized that while REM had a lower prevalence of prescription opioid use disorders, African Americans misused prescription opioids more often than White individuals (Han et al., 2015). Most recently, Han et al. (2019) examined the 2015-2016 NSDUH findings and reported that middle- and older- aged Hispanics were at higher odds for reporting past year POM. Beyond the NSDUH, other nationwide surveys have been analyzed by various researchers to help determine the prevalence of PDM in REM. Vietri et al. (2014) conducted a national survey and found that REM reported higher rates of POM compared to White individuals in the three months prior to data collection. Similarly, in a nationwide prevalence study of rates of admission to opioid treatment programs, Pouget et al. (2018) found that in recent years, African American individuals had continually increased rates of POM. Throughout the 11 years that data was collected, opioid misuse by African American individuals presenting to the programs increased from 36% in 2005 up to 57% in 2010 and, most recently, 49% in 2016. While the percentage of REM's PDM was similar to that of White individuals, it is important to note that PDM had increased for the African American and Hispanic populations at a higher rate from 2005 to 2016 compared to White individuals. These more recent studies have helped to highlight that, while the differences in PDM are not always statistically significant between White and REM populations, PDM in REM is still prevalent and should not be overlooked.

Research that has been conducted with primarily REM-specific participants have been beneficial in helping to determine the most commonly used prescription drugs

within the REM population. Of the common prescription drugs, prescription opioids continue to be the most misused. Barry et al. (2011) conducted a study on nonmedical use of prescription opioids in United State veterans from predominantly African American and Hispanic backgrounds. In their research, they found that overall 13% of their participants engaged in POM. Of that 13%, those who identified as Hispanic had the highest associated use POM. Similarly, a study of Hispanic college students found that almost a third of participants reported lifetime PDM, primarily prescription opioids (Cabriales et al., 2013).

While prescription opioids are the most widely abused drug, when someone misuses one drug, they are at an increased risk of also misusing other substances. Buttram and Kurtz (2016) found that individuals who already misuse prescription opioids have also engaged in elevated use of stimulants (49.8% of respondents) and sedatives (93.5% of respondents). Similar to the previous studies, one study of Hispanic and African American individuals found elevated levels of the benzodiazepine, Alprazolam, being most frequently misused (76% of respondents) in the local electronic dance music scene (Kurtz et al., 2017). When discussing the prevalence of PDM in REM, it is also important to note how other predictors of increased PDM use may correlate with REM use.

Predictors of PDM among Racial/Ethnic Minorities

The presence of PDM predictors is important to consider when reviewing the instances of PDM in White and REM individuals. Predictors such as residential instability (Ford & Rigg, 2015), living within rural communities (Palombi et al., 2018),

and perceived discrimination (Kecojevic et al., 2015) can increase an individual's daily stress and likelihood to engage in PDM. These predictors, while previously explored through a majority lens, has been increasing in the REM population over the past two decades. Similarly, specific predictors of REM PDM have been identified in recent years (Muñoz-Laboy et al., 2014; Rigg & Ibañez, 2010). It is important to review the prevalence of REMs within these predictor areas and how these predictors may be acutely affecting these individuals' PDM risk.

One such predictor of PDM is residential instability. Ford and Rigg (2015) found that residential instability such as moving more than three times in the past year, having trouble paying rent, poverty, overcrowding, staying with relatives, or spending the bulk of the household income on housing costs was a significant predictor of PDM in White and African American individuals. Living below the poverty line is also detrimental to an individual's overall health as poverty can intensify or increase the probability of the onset of mental illness (SAMHSA, 2015). SAMHSA (2015) found that of the 9.8 million adults with a serious mental illness, 2.5 million lived below the poverty line. This is important to consider when discussing the negative consequences of overlooking REM PDM as 48% of African Americans, 41% of Hispanics, and 21% of Asian Americans live in high-poverty neighborhoods compared to 16% of White individuals (Joint Center for Housing Studies of Harvard University, 2019).

Individuals living within rural communities have also been found to be at an increased risk for POM compared to individuals living in urban or metropolitan areas (Palombi et al., 2018; Wang et al., 2013). While White individuals continue to make up a majority of the population in rural communities, REM have been moving to rural areas at

increased rates. The rural population gain from 2000 to 2010 was made up of less than a quarter of White individuals. Instead, more than half of all rural towns can attribute their recent dramatic growth in population to Hispanic individuals. Over the past decade, African American and Asian American individuals have also had modest population gains in rural communities (The Housing Assistance Council [HAC], 2012). This increasing community within rural areas is alarming as many rural areas' job markets have not recovered since the Great Recession of 2007-2009. According to the U.S. Department of Agriculture (2019), employment-to-population ratios are lower in rural counties compared to urban counties. The increased unemployment rates likely have similar negative consequences on people experiencing unemployment as they do with housing instability. These residential demographics should be further considered when discussing the prevalence of REM PDM engagement as they are beginning to enter into these higher risk areas.

Another area of interest that should be considered is the contribution of perceived discrimination on PDM among REM but especially subpopulations such as lesbian, gay, and bisexual (LGB) individuals. Members of the LGB community are at an increased risk of earlier initiation into PDM (Kecojevic et al., 2012). In one study in which individuals could identify as both a member of a REM group and a sexual minority, those who reported higher levels of social homophobia/racism and higher levels of depression were more likely to report PSM (Kecojevic et al., 2015). This intersection of minority status and mental health can leave REM individuals at an increased risk of PDM.

In some studies, being a part of a REM group has been considered a protective factor against PDM. In one review of recent PDM literature, Young et al. (2012) found

that being White was associated with increased prevalence of use, whereas being a REM was associated with decreased instances of PDM. Conversely, Rigg and Ibañez (2010) reported that REM may be at an increased risk for PDM as their motives for engaging in PDM may differ from other groups. For example, the study states that compared to White individuals, African American individuals may engage in PDM to accentuate or enhance the effects of other drugs. Such that, they may engage in polysubstance use to "get higher" or make the come down of another drug easier. Similarly, Hispanic individuals may be more motivated to engage in PDM to relieve anxiety or get high. Similar results can be seen in Muñoz-Laboy et al. (2014), in which the presence of depression symptoms in Hispanic men was correlated with a higher prevalence of PSM. When REM individuals are removed from the conversation regarding PDM and the disparities they face are not discussed, this leaves them at an increased risk of negative potential outcomes in their health and quality of life.

Substance Use Health Disparities

While being disregarded in PDM research, REM are also disproportionately exposed to unequal treatment in the healthcare setting. Inequitable access and unequal treatment are frequently referred to as a health disparity. According to the CDC (2018), health disparities are defined as "the preventable differences in the burden of disease, injury, violence, or opportunities to achieve optimal health that are experienced by socially disadvantaged populations" (para. 1). These health disparities are routinely seen in physicians' prescribing practices and substance use treatment affordability, accessibility, and continuity for REM individuals.

Currently there are racial/ethnic differences in prescribing patterns of prescription drugs, specifically opioids. Groenewald et al. (2018) found that White children were prescribed opioids at higher rates than African American, Hispanic, and Asian American children regardless of provider race/ethnicity. In these instances, REM children were more likely to be prescribed non-opioid analgesics. Some of these prescribing patterns may be due to the incorrect biases that many healthcare workers hold regarding African American individuals, how they experience pain, and their increased likelihood of becoming addicted to prescription opioids (Hoffman et al., 2016; Santoro & Santoro, 2018). In a study completed by Hoffman et al. (2016), both medical students and residents held false beliefs about biological differences between African American and White individuals; such that African American individuals do not experience pain as highly as White individuals. These beliefs, as well as the belief that PDM is not a problem in the REM populations, can elevate a REM individuals' risk for misusing prescription opioids as they may be overlooked and not properly assessed for their use and misuse.

Research has shown that African American and Hispanic individuals are less likely to receive addiction treatment than White individuals (Kennedy, 2019). This in part may be due to the lack of understanding of substance use disorders, specifically the risk of opioid use disorders (OUD) from POM. SAMHSA (2020) reported that many African American individuals are not informed about the current standard treatment options for OUD and may hold many misperceptions surrounding these treatment options. Lack of access to substance use treatment, as well as unequal treatment by providers, is common in many African American communities (SAMHSA, 2020).

This can specifically be seen in the uneven dissemination of medication assisted treatment (MAT) for opioid dependence. In lower income areas, Methadone treatment centers are most common, but they create a heavier burden for the individual compared to the lesser available Buprenorphine treatment. Methadone treatment programs are federally regulated programs that require daily clinic visits, regular drug testing, counseling, various other employment disruptions, and increase financial burden on the individual (Acevedo et al., 2015; Hansen et al., 2016; Hansen et al., 2013; Santoro & Santoro, 2018). According to Hansen et al. (2016), Buprenorphine treatment is considered less stigmatizing and has become more accessible to REM individuals in recent years. While their access to Buprenorphine treatment programs has increased, REM individuals are still less likely to receive this treatment compared to White individuals in the same low-income area. When REM individuals do receive treatment, they are at an increased risk of prematurely terminating their services due to a lack of culturally responsive and respectful care (SAMHSA, 2020). Saloner and Lê Cook (2013) found that even if African American or Hispanic individuals enter into addiction treatment, they were found to be 3.5 to 8.1% less likely than White individuals to complete the treatment. As REM continue to be disregarded in conversations surrounding PDM, the increased negative outcomes related to PDM may also be overlooked.

Racial Differences in PDM Outcomes

At first glance, the existing research regarding REM engagement in PDM is inconsistent, and makes it appear as if this is more of a problem for White individuals. As a result, there are multiple potential negative outcomes specific to the REM community

regarding PDM that are often overlooked. In general, continued misuse of prescription drugs is associated with increased instances of overdose or death, emergency room visits, risky health and sexual behavior, and contact with the criminal justice system (Benotsch et al., 2011; Drug Abuse Warning Network [DAWN], 2013; Han et al., 2015; Mokdad et al., 2018; Rosenberg et al., 2017). In more recent years, these negative outcomes have become more salient in REM communities.

REM representation in the rates of mortality from prescription opioids overdose has risen in the past 15 years (Han et al., 2015; Mokdad et al., 2018). In 2017, opioid overdose death rates were higher for African American individuals in multiple states including Illinois, Iowa, Michigan, Minnesota, Missouri, Washington, Washington D.C., West Virginia, and Wisconsin. In Chicago alone, African American individuals make up only a third of the population but represent almost half of their opioid related deaths (Kennedy, 2019). While White individuals continue to represent the highest percentage of opioid related overdose deaths, both African American and Hispanic individuals had disproportionately higher changes in their rate of overdose deaths. From 2013 to 2017, African American and Hispanic individuals experienced an 18-fold increase and 12.3-fold increase in mortality per 100,000 individuals, respectively. This is higher than the 9.2-fold increase that White individuals experienced (Agency for Healthcare Research and Quality, 2020).

Non-fatal overdoses and other negative side effects of PDM have led to an increase in emergency room visits. The Drug Abuse Warning Network (DAWN, 2013) estimated that in 2011, 1,244,872 emergency room visits were related to PDM. In regard to REM, African American and Hispanic individuals made up 11.7% and 8.4% of these

emergency room visits. These numbers may actually be larger as many emergency departments have missing information regarding race and ethnicity (DAWN, 2013).

Continued PDM can also lead to risky health and sexual behaviors. Bhatia et al. (2020) analyzed a nationally representative survey on adolescent POM and found that adolescents who engaged in POM were associated with increased risky health behaviors. These behaviors include risky driving behavior, sexual behavior, increased substance use, suicide attempts, and violent behaviors. Similar results were found in a study of young adults conducted by Benotsch et al. (2011). Respondents who reported significant levels of PDM were more likely to report the use of other drugs such as alcohol, marijuana, and other illicit drugs, as well as increased sexual behaviors. Risky sexual behaviors were defined in the study as increased likelihood of having unprotected sex, using substances prior to sexual intercourse, and having multiple sex partners.

Individuals who engage in PDM may also begin using other drugs or have polysubstance use problems. It has been estimated that about 80% of people who use heroin originally engaged in POM (NIDA, 2020b). The increased odds of engaging in heroin use after PDM is higher for White and Hispanic individuals compared to other racial/ethnic groups (Silvia S. Martins et al., 2015). In a study conducted by Kelly et al. (2014), 65.9% of individuals who endorsed PDM reported using their prescription drugs in combination with another illicit drug. Research on PDM and the associated risky health behaviors was limited for REM. Each of the included studies included either nationally representative samples or a percentage of REM.

Lastly, REMs are more likely to come into contact with, and remain in, the criminal justice system for drug-related crimes compared to White individuals. In a study

conducted by (Rosenberg et al., 2017), African American individuals were convicted fewer times than White individuals, but they had significantly more sentences resulting in incarceration. In 2015, roughly three-quarters of individuals incarcerated for drug related offenses were either African American (39%) or Hispanic (37%; Taxy et al., 2015). As REM involvement in the PDM epidemic is overlooked, it is possible that these negative outcomes could continue to increase without proper considerations for the REM community.

Drug Attitudes and PDM

Attitudes surrounding prescription drugs often differ from those of illicit drugs. Due to their perceived safety and availability, prescription medications have been found to have a lower perceived risk of harm and stigma. Various prescription drugs are almost universally present in households and are available from a variety of sources including the doctor's office, friends and family, or online illicit markets (Fleary et al., 2013; Fox & Ward, 2008; McHugh et al., 2015). Individuals may hold the belief that prescription drugs, such as opioids, are safer as they are prescribed by doctors and have a legitimate aspect to their use (Daniulaityte et al., 2012). Even the diversion practices of prescription drugs are considered more positive than those of illicit drugs. Young people have consistently indicated that their friends, peers, and family are common sources of prescription drugs (Lord & Marsch, 2011). The accessibility of prescription drugs via online markets is also seen as more "user-friendly" than obtaining them through a local physician (Fox & Ward, 2008).

In one survey conducted through Facebook, young adult respondents overall indicated some agreement that prescription medications are easier to hide, do not often produce hangover effects, help to facilitate getting drunk, produce longer-lasting effects compared to drugs such as alcohol, and lead to less trouble in the event of being caught in possession of them than illicit drugs (Lord et al., 2011). These beliefs were most strongly held by individuals who were reported to be already misusing prescription drugs. Attitudes regarding the misuse of prescription drugs can also be relaxed and may provide insight into an individual's intentions of engaging in PDM. In a survey conducted by Partnership (2014), roughly a third of the teens surveyed reported that they believe prescription drugs can be used as study aids and that it is okay to use non-prescribed prescription drugs to help cope with pain or an injury. In the same study, two thirds of respondents stated that there is still great or moderate risk associated with trying a prescription drug without a prescription. Even as individuals are aware of some of the risk factors associated with prescription drug misuse, they may continue to hold beliefs that it is okay to use prescription drugs if you have a valid reason. This is a slippery slope towards more extensive misuse as individuals can develop a dependence on these prescription drugs they only intended to use a few times. The beliefs and attitudes regarding prescription drug use are important to consider when conducting research or treatment on PDM as they often provide a direct link to an individual's levels of PDM.

PDM in the Media

While research on the prevalence of PDM in the media is limited, anecdotally it has been depicted in television and movies such as *House* (Attanasio et al., 2004-2012),

Orange is the New Black (Kohan et al., 2013-2019), *Nurse Jackie* (Brixius et al., 2009-2015), *Judy* (Goold, 2019), *Love & Other Drugs* (Zwick, 2010), and *Charlie Bartlett* (Poll, 2007). Prescription drugs have also gained notoriety in popular music. Songs such as "Adderall Admiral" (Brown, 2011), "Codeine Crazy" (Wilburn, 2014), "Servin' Lean" (Davis & Williams, 2013), and "The Percocet & Stripper Joint" (Wilburn, 2015) detail the various artists' experiences using prescription drugs. Beyond PDM, drugs such as alcohol and marijuana are regularly depicted in the media. In 2010, it was reported that drinking scenes were present in television every 22 minutes with more than a third of these depictions being humorous or including individuals who are considered to be influential, successful, or attractive (Council on Communications and Media, 2010). A content analysis of the Motion Picture Association of America top 100 box office hits from 2005 to 2010 was conducted to determine the degree to which the average individual is exposed to alcohol related activity in films. Jackson et al. (2018) determined that of these 530 movies, 84.9% of them depicted at least some alcohol use. In the music industry, references to alcohol and other drugs have been on the rise in the top 100 Billboard songs since 1968. This was most significantly seen between 1988 and 2008, in which references to drugs and alcohol increased from 12% to 30% (Christenson et al., 2012). Drug use references have been on the rise in popular culture and this exposure to drug use can increase an individual's use behaviors. These studies have yet to be replicated with prescription drugs but demonstrate the prevalence of depiction of low stigma drug use in the media.

Similar to the beliefs held in PDM research, the news media regularly depicts PDM as a predominantly White problem. In a review of news articles from 2001 to 2011,

Netherland and Hansen (2016) found that new headlines explain the PDM epidemic as an American moral panic affecting primarily White suburban youth and middle aged individuals. The review further detailed that the articles focusing on suburban or rural White individuals' drug use would explore the etiology of the use. Explanations for their PDM would typically fall into various categories including using diverted prescriptions from family, that the individual "fell in with a bad crowd," or that they began misusing and became addicted to a prescription drug that was originally prescribed for a legitimate reason. In these articles, White individuals were often humanized in their use and seen as blameless. Drug addiction is considered to be an external threat that could affect anyone. When REM drug use is discussed in news articles, it is explained as a personal problem and their use is explained through the criminality of their actions (Netherland & Hansen, 2016). These findings are also anecdotally shown in two current articles, that depict only White individuals as victims of America's PDM epidemic, both aptly named "Faces of an Epidemic" (Helling & Fleming, 2017; Talbot & Montgomery, 2017). This continued focus on PDM as only a White problem continues to perpetuate the beliefs that REM are not misusing prescription drugs and should not be considered in research or policy intervention.

Potential Media Influence on PDM

Previous research has found media exposure to be positively associated with the use of various illicit drugs in adolescents and young adults (Muñoz-Laboy et al., 2014). This work has yet to extend to PDM, thus we use the effects of alcohol exposure as a proxy for the potential impact of media exposure on PDM. Alcohol referencing in media can affect an individual's use across a variety of levels. Exposure to alcohol related

content in music has been significantly associated with the onset of alcohol use in adolescents (Slater & Henry, 2013). Grenard et al. (2013) reported that exposure to alcohol advertising, such as commercials broadcast on television, and appreciation for those advertisements by children in the seventh grade had a direct effect on their later alcohol use and alcohol related problems in the tenth grade. Such that, the more they were exposed to and appreciated the advertising, the more likely they were to engage in elevated levels of alcohol use. Specific alcohol branding also has an effect on adolescent use. According to Roberts et al. (2016), rather than drink cheaper brands, youth are more likely to express their preferences and consume the brands of alcohol that they are more frequently exposed to in television and advertising. There is also a correlation between the amount of exposure that an individual has and their personal use. In a 10-year longitudinal study on substance use-related media exposure and alcohol use from adolescence to young adulthood, researchers found that adolescents who were exposed to higher levels of substance use were more likely to report steeper increases in alcohol use (Davis et al., 2019).

Exposure to alcohol use in movies has had similar results to those of television. In one large panel survey of African American and White adolescents, respondents were surveyed on their exposure to 50 randomly selected movies featuring alcohol use references, as well as their willingness to drink and the number of alcoholic drinks consumed in the past month. Gibbons et al. (2010) found that exposure to drinking in movies was associated with more alcohol consumption for both African American and White adolescents, though findings were stronger for White adolescents. Jackson et al. (2018) employed similar methods to determine how exposure to alcohol content in

movies is associated with alcohol use and early drinking milestones. In this study participants had on average seen 12.31 different films which depicted around 5.72 hours of alcohol related content. This exposure to alcohol content in movies prospectively predicted earlier onset of alcohol involvement. The findings regarding the influence of media in adolescent drug use have also been witnessed in the young adult population.

Hunt et al. (2011) utilized the survey technique of presenting respondents with a randomized list of 50 movies featuring alcohol-related content. On average the respondents had seen 19 of these movies and were exposed to about 12.1 hours of alcohol-related content. The researchers found that a third of the young adults in their study were classified as “heavy drinkers” and half were classified as “binge drinkers.” Those individuals who were classified as either a heavy or binge drinker reported higher levels of exposure to alcohol in film. Lastly, Osberg et al. (2012) examined how exposure to movies featuring college drinking would affect a freshman student’s typical weekly drinking. They found that after viewing these movies, students were more likely to report increased levels of drinking in the across the following week. An individual’s drug use can also be affected by the interaction of their media exposure to drug use and the attitudes they hold towards drug use.

Interplay of Media Exposure and Drug Attitudes on PDM

As was previously discussed, the attitudes that an individual holds regarding drug use influences their likelihood of engaging in drug use, specifically PDM (Cabriales et al., 2013; King et al., 2020; Malewski, 2018). The Council on Communications and Media (2010), stated that the increased amount of advertising in media of prescription

drugs has given adolescents the message that there are multiple drugs for every occasion. An example of this can be seen in how media has sensationalized prescription stimulants. Racine and Forlini (2010) reported that the marketing of prescription stimulants as "enhancement" drugs has influenced individual's beliefs that these drugs are safe and acceptable to use. These marketing strategies are usually employed without clear scientific evidence or education regarding the long-term risks associated with continued use. Due to this, individuals may be more prone to engage in PSM after seeing these skewed media portrayals. While the literature covering media exposure and attitudes towards PDM is sparse, research shows that the media an individual is exposed to and their attitudes towards drug use can influence an individual's actual drug use.

How the media and attitudes influence use has been explained more extensively in regard to alcohol and other drug research. Osberg et al. (2012) reported that the norms developed by exposure to media messages of alcohol use have a direct effect on the amount of drinks consumed in a week. College students watch movies featuring positive alcohol use and form beliefs that these behaviors are acceptable. Another study of college students' likelihood to engage in illegal and prescription drug use focused on their identification with reality TV programs. Fogel and Shlivko (2016) reported that students who identified more closely with the characters in the program were associated with greater odds for illegal drug use. This is partially explained by the Social Cognitive Theory (Bandura, 1989). The Social Cognitive Theory can help form an individual's attitudes towards drug use by informing, enabling, motivating, and guiding the individual's behavior.

Elmore et al. (2016) explained how media can be considered a “super peer”, or an influential source of information, regarding alcohol and tobacco use. They explain that the media helps to socialize and normalize beliefs about the prevalence and acceptability of adolescent substance use. The concept of the media being a “super peer” in developing attitudes towards use can be explained in part by the Message Interpretation Processing (MIP) model (Austin & Johnson, 1997). The model states that when encountering substance use in the media, if youth find the message similar to their own experience, desirable, and accurate to that of the real world they are likely to incorporate these attitudes into their own thinking. More favorable perceptions of the substance use media message contribute to the youth wanting to identify with these situations and engage in these behaviors. The MIP model is suggested to play a role in developing attitudes related to substance use in multiple research studies (Collins et al., 2017; Davis et al., 2019; Elmore et al., 2016). These studies have not been conducted extensively with REM or in broader adult populations. As attitudes related to prescription drugs and their prevalence in the media increases, it is of continued importance to review the current evidence-based treatments that are used to treat PDM.

Treatments for PDM

Prescription Opioid Treatment

When an individual endorses POM or is diagnosed with an opioid use disorder (OUD), it is important that they begin treatment to manage and stop use to decrease the possibility of developing a prescription substance use disorder, negative side effects, and

risk of overdose. Currently, there is still some debate on what type of treatment is sufficient or necessary for OUD. Most professionals report that individuals should engage in medically assisted treatment (MAT) in which therapy and medication are combined. In this situation, medication should play a central role in the treatment (Committee on Pain Management and Regulatory Strategies to Address Prescription Opioid Abuse, 2017). The main medications prescribed for OUD treatment include methadone, buprenorphine, naltrexone, and the combination buprenorphine-naltrexone, suboxone. These medications help individuals attain and maintain abstinence from opioids and reduce their addiction-related behaviors by relieving withdrawal symptoms and cravings (buprenorphine & methadone) or by blocking opioid receptors in the brain, which prevents opioid drugs from taking proper effect in the body (naltrexone; Bonhomme et al., 2012; Ling et al., 2011; NIDA, 2020a, 2020e).

Buprenorphine, the partial opioid receptor agonist, is widely available but is a high cost for individuals to utilize. This medication is commonly used due to the self-administration, low monitoring by providers, less severe side effects, and lower probability of overdose (Bonhomme et al., 2012). Buprenorphine is available via multiple routes of administration such as sublingual tablets or film, transmucosal film, implants, and extended-release injection (SAMHSA, 2021). Alternately, methadone, the full opioid receptor agonist, is less widely available for treatment but cost less for individuals to use and has a higher retention rate in treatment. As previously mentioned, methadone is administered in a supervised setting and requires high monitoring during treatment due to the greater risk for severe side effects and probability of respiratory depression or death (Bonhomme et al., 2012). Similarly to buprenorphine, methadone can be administered

through tablets, oral solutions, and trnsmucosally . Beyond these routes of administration, methadone may be administered via enteric tubes, subcutaneously, intravenously, or rectally (Elsass et al., 2018).

Naloxone is a medication that is prescribed to help reverse opioid overdoses for 90 minutes so the individual can receive life-saving medical treatment. If an individual experiences an overdose, Naloxone can be administered by first responders, emergency medical personnel, or a bystander to restore their normal respiration (NIDA, 2020a). Some states require all medical professionals to prescribe naloxone for any patients on opioid medications in an effort to stem the tide of overdose deaths. In MAT, individuals are also instructed to begin a form of behavioral therapy to modify their behaviors and attitudes related to their drug use to develop other more adaptive coping strategies.

Through behavioral therapies, clinicians help individuals increase their healthy life skills and maintain their medication treatment. The NIDA (2020e) report indicates that the most common behavioral therapies for addiction treatment include Cognitive-Behavioral Therapy (CBT), Multidimensional Family Therapy, Motivational Interviewing, and Contingency Management. Individuals with more intensive, severe problems should consider residential treatment settings such as therapeutic communities, shorter-term residential treatments for detoxification help, or recovery housing to ease their transition to independent life away from addiction (NIDA, 2020e). However, many communities have poor access to residential treatment beds – indicate this as well as the rates in REM and other vulnerable communities particularly for underserved individuals.

Prescription Stimulant Treatment

Currently there are no medications used to treat PSM. CBT has been found to be an effective treatment for reducing PSM as individuals are taught to modify their drug use expectations and behaviors. This can be beneficial for college students, or other individuals, who are misusing the prescription stimulants for "cognitive enhancing" properties. Another form of effective treatment for PSM is Contingency Management. Through Contingency Management individuals are provided incentives, such as vouchers or small cash rewards, for engaging in positive behaviors, specifically staying drug-free (NIDA, 2020e).

CNS Depressant Treatment

According to the NIDA (2020a), current research is limited regarding treatment for individuals who are addicted to or misuse prescription CNS depressants. Individuals attempting to stop using prescription CNS depressants should not go through the withdrawal process on their own as there can be serious side effects, such as seizures. Rather, it is important that they undergo medically supervised detoxification to gradually taper off their prescription drug use. Once detoxed, individuals misusing or addicted to CNS depressants should engage in inpatient or outpatient counseling, similar to those described in the previous sections, to maintain their drug-free lifestyle. Research has found CBT to be a successful treatment in helping individuals adapt to discontinuing benzodiazepine misuse (NIDA, 2020a).

Efficacy of Treatment for REM

While each of the previously mentioned treatment options for PDM have been found efficacious for White individuals, the efficacy of treatment for REMs is still unclear. The aforementioned treatment options are also used for substance use treatment beyond PDM and efficacy trials have been conducted to determine their effectiveness for REMs. In some cases, substance use interventions are not equally effective for REMs and cultural adaptations help increase the efficacy (Burlew et al., 2020). Cultural adaptions to substance abuse interventions are a method of increasing the cultural relevance of existing evidence-based interventions (Burlew et al., 2020). No identified studies used these potentially impactful modifications. Across various efficacy trials, researchers have reported mixed reviews.

In one study, the effectiveness of contingency management treatment was not equal for African Americans compared to White individuals (Montgomery et al., 2015). Conversely, Barry et al. (2009) found that contingency management treatment was efficacious for methadone treatment with cocaine users across White, African American, and Hispanic participants. These findings were supported by Stoner (2018) in a review of effective treatments for substance use disorders in REMs. Stoner (2018) also provided support for various substance use treatments including Cognitive-Behavioral Therapy (CBT), Multidimensional Family Therapy, and Motivational Interviewing. These mixed findings provide mild support for the utilization of these treatment methods for REMs affected by PDM. Future research will benefit from continued studying of the efficacy of these treatments for REM and the potential need for cultural adaptations.

CHAPTER FIVE

DISCUSSION

The PDM epidemic has plagued the U.S. for the past three decades and in one year alone had an engagement rate of nearly 16.9 million individuals (DuPont, 2010; Prescription Drug Abuse Subcommittee, 2013; SAMSHA, 2019). While this epidemic is vast reaching across the nation, REMs have routinely been removed from the conversation regarding this epidemic and the effect that is has on the individuals living through it (Wiwad et al., 2015). The present review sought to build upon the limited research surrounding REM engagement in PDM and the associated variables. Specifically, the present review identified and summarized existing research on REM adult PDM, the major variables associated with this relationship, and current evidence-based treatments.

Prevalence of REM in PDM

Currently, the PDM epidemic focus continues to be dominated by White individuals (Netherland & Hansen, 2016; Varga, 2012; Wang et al., 2013; Wu et al., 2010). REM are often overlooked within the epidemic as some studies have found their involvement in PDM to be insignificant, present but less than those of White individuals, or at similar rates to White individuals (Bali et al., 2013; McCabe et al., 2019; Varga, 2012; Wang et al., 2013; Watkins & Ford, 2011; Wu et al., 2010). From the findings of these research studies, researchers could conclude that further research focusing on REM's PDM is unnecessary and not a problem of note. Regardless, this review highlights the relevant other studies of note which have produced contradicting findings which

highlight the important role of REM in the PDM epidemic. Multiple nationwide surveys including the 2012, 2015, and 2016 National Surveys on Drug Use and Health found POM to be highest among African American adolescents, African American adults, and middle- and older- aged Hispanics respectively (Ford & Rigg, 2015; Han et al., 2015; Han et al., 2019). Misuse in the REM has also been reported to be on the rise from 2005 to 2016 with one study finding increases in misuse by African American and Hispanic populations increasing from 36% to 49% (Pouget et al., 2018). Other studies have also reported similar findings that support those of the NSDUH and further raise the importance of including REMs in the discussion related to PDM.

When research is conducted with primarily REM-specific participants, researchers have been able to tease apart the nuances of misuse within these populations. Consistent with White individuals, prescription opioids remain the most misused prescription drug among REMs (Barry et al., 2011; Cabriales et al., 2013). Researchers have also found that misuse of one prescription drug has been linked to engagement in misuse of other prescription drugs (Buttram and Kurtz, 2016). These findings are important as they raise awareness of the instances of PDM and misuse decisions of REM in the field. By increasing understanding of the REM populations involvement in PDM, researchers are able to raise further awareness and combat the negative outcomes that REMs are exposed to.

Negative Outcomes of PDM on REM

For many REMs this epidemic has persisted unchecked across the past three decades. As focus has remained on White individuals, health disparities pertaining to

REMs have increased leaving them at a disparate risk of negative PDM outcomes (Han et al., 2015; Mokdad et al., 2018; SAMHSA, 2020; Taxy et al., 2015). These disparities include unequal treatment within the healthcare setting such as provider unwillingness to prescribe opioid medications to REM for pain (Groenewald et al., 2018) and a decreased likelihood of receiving addiction treatment (Kennedy, 2019; Saloner & Lê Cook, 2013; SAMHSA, 2020). While it is evident that PDM is significant within REMs, the continued dismissal of their involvement within the PDM epidemic has increased the severity of negative outcomes specific to the REM community.

In general, continued misuse of prescription drugs is associated with increased instances of overdose or death, emergency room visits, risky health and sexual behavior, and contact with the criminal justice system (Benotsch et al., 2011; Drug Abuse Warning Network [DAWN], 2013; Han et al., 2015; Mokdad et al., 2018; Rosenberg et al., 2017). These negative outcomes, while present for all individuals, have disproportionately affected REMs. This can most saliently be seen in mortality rates and contact with the criminal justice system. Specifically, REMs have experienced the highest increase in opioid related overdose deaths with an 18-fold increase for African American and 12.3-fold increase for Hispanic individuals from 2013 to 2017 (Agency for Healthcare Research and Quality, 2020). African American individuals are most affected by these mortality outcomes. Across multiple states African American individuals had the highest opioid overdose death rates in 2017 (Kennedy, 2019). Similarly, compared to White individuals, REMs are more likely to remain in the criminal justice system for drug related crimes (Rosenberg et al., 2017; Taxy et al., 2015). Left unaddressed, these

negative outcomes could continue to increase at exponential rates as REM continue to be improperly included within the discussion regarding the PDM epidemic.

Consideration of Prescription Drug Attitudes and Media Exposure

Unlike illicit drugs, individuals often hold positive or neutral attitudes towards prescription drugs. Prescription drugs are often considered to be lower risk and do not have stigma surrounding them as they are readily available within households and are available from a variety of credible sources, such as the doctor, friends, or family, and other avenues including illicit markets (Fleary et al., 2013; Fox & Ward, 2008; McHugh et al., 2015). Individuals are also more likely to endorse the misuse of prescription drugs for beneficial reasons such as study aids and to cope with pain or injury (Partnership, 2014). While the potential risks related to PDM are relatively known, individuals often justify their misuse with valid reasons such as those previously mentioned. The justification of use and engagement in PDM can be explained through the Theory of Planned Behavior (Ajzen, 1991) as individuals are more likley to engage in a behavior based on the attitudes that they hold related to it. Those who hold more liberal attitudes related to prescription drug use are also at an increased risk of engaging in PDM (Cabriales et al., 2013; King et al., 2020; Malewski, 2018). This justification and the overall beliefs and attitudes held regarding prescription drugs create a slippery slope towards more extensive PDM and dependency.

PDM in the media also poses a unique threat to current society and the attitudes held regarding prescription drugs. Prescription drug use and misuse has been increasingly depicted in current media such as movies, television shows, and music (Peteet et al.,

2020). While the prevalence is not entirely known, research pertaining to other drug use, such as alcohol, has found that increased exposure to drug use in the media is positively associated with the onset and increase in drug use (Grenard et al., 2013; Muñoz-Laboy et al., 2014; Slater & Henry, 2013). This can be directly witnessed in the sensationalization of prescription stimulants as "enhancement" drugs which increases individual's positive regard and acceptability of stimulant misuse (Racine & Forlini, 2010). With alcohol and tobacco use, the media has been considered a "super peer" that helps to socialize and normalize beliefs about prevalance and aacceptability of subtstance use in adolescents (Elmore et al., 2016). Future research focusing on PDM in the media and the associated attitudes is likely to find similar findings to those previously mentioned. Moreover the impact of media amd attitudes on actual misuse is needed. As positive PDM continues to be popularized in media, attitudes related to prescription drugs and their misuse are likely to increase thus continuing to normalize and continue to spur the current PDM epidemic.

Efficacy of PDM Treatment in REM

Currently, there are multiple evidence-based treatments that are used to treat PDM. These include medical treatments such as medically assisted treatment (MAT) for POM and medically supervised detoxification for prescription CNS depressant misuse (Committee on Pain Management and Regulatory Strategies to Address Prescription Opioid Abuse, 2017; NIDA, 2020a). Across all PDM classes, researchers have found CBT to be an efficacious behavioral therapy(NIDA, 2020a; NIDA, 2020e). Other effective treatments such as contingency management have been supported for the treatment of POM and PSM (NIDA, 2020a; NIDA, 2020e). Unfortunately, the efficacy of

these treatments for REMs is still unclear. In general, REMs are less likely to receive treatment for their PDM (Kennedy, 2019).This is in part due to the uneven dissemination of MAT programs within REM communities and burden that available clinics place on individuals within the area (Acevedo et al., 2015; Hansen et al., 2016; Hansen et al., 2013; Santoro & Santoro, 2018). REM indivdiuals also have higher drop out rates in MAT programs due to a lack of culturally responsive and respectful care (SAMHSA, 2020). Rates of drop out may be explained by the varying levels of support for the actual application of these treatment modalities for REMs (Barry et al., 2009; Montgomery et al., 2015; Stoner, 2018). Similarly, research has shown that African American individuals overall are not informed by their providers about the current treatment options available for PDM (SAMHSA, 2020). While some efficacy research with REMS has been completed, more research is still necessary to make definitive claims regarding the REM population and their ability to receive culturally responsive and appropriate care.

Review Strengths and Limitations

As has been discussed in the current review, proportionally fewer studies have focused on how the PDM epidemic has affected REM. This examination adds to this limited body of research and highlights the importance of considering the unique effects that PDM has on REMs including predictors, health disparities, and possible negative outcomes of misuse. Another strength of the current review is the exploration of the relationship between attitudes and media in PDM. Existing reviews have extensively researched the relationship that attitudes regarding alcohol and other drugs, but this is one of the first to review this relationship as applied to PDM. Lastly, this review has

identified multiple areas of PDM research that need to be further investigated including the involvement of REM in the PDM epidemic, the relationship of attitudes and media research for PDM, and the efficacy of treatment interventions for REMs.

The limitation of the current review is the non-systematic manner in which studies were identified and selected. Thus, bias may have been introduced in the article selection process. Due to this, it is possible that other relevant information on the topic is absent. Similarly, relevant information may have been overlooked as articles were not included if the full text was not readily available or was unpublished. Lastly, the inclusion criteria of being published within the U.S. and within the past 15 years may have also excluded relevant data published in culturally similar countries or older information.

Future Directions and Clinical Implications

Inclusion and Intervention

The current review and similar studies have highlighted the lack of consideration that has been given to REMs in the PDM epidemic (Peteet, 2017). Future research is needed to improve the tracking of the prevalence, risk factors, negative outcomes, and evidence-based treatments of PDM among REM. For decades, REMs have been underrepresented in PDM research (Waheed et al., 2015), leaving them at disparate risk of increased risk factors and negative outcomes. By including representative samples of REMs in current PDM research, more accurate data will be published that will set the stage for nationally relevant studies and future interventions.

Similarly, further research is necessary to determine the applicability and efficacy of evidence-based treatment interventions for REM with PDM. As there have been mixed results regarding the efficacy of PDM treatment for REMs and White individuals. Future interventions may benefit from cultural adaptations to increase their effectiveness (Burlew et al., 2013).

There is also direct evidence that REMs are present within the various at-risk groups for PDM including those who experience residential instability (Ford & Rigg, 2015), rural living (Palombi et al., 2018), and perceived discrimination (Kecojevic et al., 2015). These psychosocial factors need to be considered in designing interventions.

Prevention

Alcohol and other drugs have received extensive coverage in research on attitudes and the effects of media exposure. As the popularity of PDM continues to rise in current media, increased attention needs to be centered around the relationship between the effect of media exposure on prescription drug attitudes and how they affect the initiation and continued use of prescription drugs. Increased attention should also be paid to dispelling the myths and permissive attitudes held about prescription drugs. This can be integrated in a variety of ways including continued awareness being placed towards PDM in government public service announcements and educational programs. Increased attention should be placed on pop culture mediums such as music, social networks, television, and movies to identify current trends of PDM and populations at risk (Peteet et al., 2020). On a more personal level, parents need to raise their awareness of current drug trends, terminology, and discuss the dangers of PDM with their children (Partnership, 2013).

Individuals are at increased risk of misusing prescription drugs as they believe them to be less stigmatized and safer to use. By addressing these incorrect assumptions about prescription drugs and highlighting the negative outcomes related to PDM, it may decrease misuse.

In clinical settings, it is important that REMs are screened for their PDM at the same rate that White individuals are. Early screening can reduce the risk of future drug dependence and other negative outcomes (SAMHSA, 2011).

Early prevention can lessen the risk of onset of PDM. Proper screening and intervention may decrease instances of abuse, addiction, other risky behaviors, overdose, and death associated with prescription drugs. More coordinated, multilevel efforts can help stop the drug overdose epidemic.

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