

**Harm Reduction Approaches to Opioid Use During Pregnancy in the United States: A
Critical Literature Synthesis**

by

Courtney Joy Yoder

Bachelor of Science, Kent State University, 2017

Submitted to the Graduate Faculty of the
Department of Behavioral and Community Health Sciences
School of Public Health in partial fulfillment
of the requirements for the degree of
Master of Public Health

University of Pittsburgh

2023

UNIVERSITY OF PITTSBURGH

SCHOOL OF PUBLIC HEALTH

This essay is submitted

by

Courtney Joy Yoder

on

April 24, 2023

and approved by

Essay Advisor: Emily Dauria, PhD, MPH, Assistant Professor, Department of Behavioral and
Community Health Sciences School of Public Health, University of Pittsburgh

Ashley V Hill, DrPH, MPH, Assistant Professor, Department of Epidemiology, School of Public
Health, University of Pittsburgh

Copyright © by Courtney Joy Yoder

2023

Harm Reduction Approaches to Opioid Use During Pregnancy in the United States: A Critical Literature Synthesis

Courtney Joy Yoder, MPH

University of Pittsburgh, 2023

Abstract

Background: The use of opioids during pregnancy in the United States has become an issue of particular concern for medical professionals and researchers alike. The impacts of opioid use during pregnancy are vast, as it presents major health risks to both the pregnant individual and the fetus. Utilizing harm reduction in response to opioid use during pregnancy could significantly improve the health of this population.

Purpose: The purpose of this literature synthesis is to review the existing literature on harm reduction approaches to opioid use during pregnancy in the United States. This review will aim to clarify key concepts in the literature, identify existing harm reduction approaches, explore current evidence to support these approaches, discuss how these approaches fit within the social ecological framework, and identify and analyze knowledge gaps in this area of research.

Methods: A literature search was conducted using Medline and PsycInfo to identify relevant research articles.

Results: Fifteen articles meeting the inclusion criteria were identified and synthesized. The literature revealed gaps in the types of studies utilized for this research and a dearth in the types of harm reduction strategies utilized for opioid use during pregnancy.

Conclusion: Given the increasing number of cases of opioid use during pregnancy, these results have great public health significance. More research is needed to explore how the many types of harm reduction strategies that are used for the general population can be adapted for

pregnant people who use opioids. The studies in this review also failed to address racial disparities in the treatment of OUD during pregnancy. Further analysis of these disparities, as well as exploration of community level interventions would contribute to better treatment strategies for pregnant people who use opioids.

Table of Contents

Preface.....	x
1.0 Introduction.....	1
2.0 Background	2
2.1 Public Health Significance and Rationale	2
2.2 Substance Use and the Social Ecological Framework.....	4
2.3 Stigma	5
2.4 Harm Reduction	6
3.0 Methods.....	10
3.1 Inclusion Criteria.....	10
3.2 Information Sources	10
3.3 Study Selection.....	11
4.0 Results	14
4.1 Harm Reduction Strategies Addressed	14
4.1.1 Opioid Overdose Prevention	16
4.1.2 Lowering Barriers to Accessing OUD Treatment.....	16
4.1.3 Patient-Centered Approaches to Treatment	18
4.1.4 Reducing Stigma	21
4.1.5 Providing Harm Reduction Supplies.....	22
4.2 Addressing Levels of the Social Ecological Framework	23
5.0 Discussion.....	27
5.1 Limitations	29

6.0 Conclusion	31
Appendix A Search Strategies	32
Bibliography	41

List of Tables

Table 1. Reviewed Articles and Harm Reduction Strategies Addressed	15
Table 2. Reviewed Articles and Levels of Social Ecological Framework Addressed	24
Table 3. Summary of Literature Databases Searched.....	32
Table 4. Medline Search Strategy.....	33
Table 5. APA PsycInfo Search Strategy	35

List of Figures

Figure 1. PRISMA Search Results	13
--	-----------

Preface

I wish to acknowledge the contributions of my essay readers: Dr. Emily Dauria and Dr. Ashely V Hill. I extend a very special thank you to my advisor and chair reader, Dr Emily Dauria for her unwavering support, and commitment to seeing me through to the end of this challenging and rewarding endeavor.

My graduate education would not have been possible without the love and support of my family and friends, who held me up at my lowest points and celebrated me at my highest. And my partner, whose love, encouragement, and delicious cooking ensured my survival. I love you all.

1.0 Introduction

The use of opioids during pregnancy in the United States has become an issue of particular concern for medical professionals and researchers alike. In fact, the CDC reports that opioid use during pregnancy more than quadrupled from 1999 to 2014 (Centers for Disease Control, 2020).

Opioid use during pregnancy often results in stigmatization, judgement, and bias from medical professionals. This can, in turn, lead a pregnant person who uses opioids to receive substandard pre-natal care, or they may avoid seeking care altogether (National Harm Reduction Coalition, 2021). Harm reduction is an approach to substance use that recognizes that abstinence is not always a realistic option, but that harm and risk should be reduced wherever possible. One of the main tenants of harm reduction is that people who use drugs should be treated with respect (National Harm Reduction Coalition, 2021). The purpose of this literature synthesis is to review the existing literature on harm reduction approaches to opioid use during pregnancy in the United States. This will be accomplished by identifying and describing studies that utilize harm reduction approaches to opioid use during pregnancy, along with studies that explore the attitudes, perspectives, and beliefs of health professionals and pregnant people who use opioids about harm reduction approaches. This review will aim to clarify key concepts in the literature, identify existing approaches, explore current evidence to support these approaches, and identify and analyze knowledge gaps in this area of research.

In this essay, the author aimed to use gender-neutral language. For example, the patients or participants in the reviewed studies are referred to as “pregnant people” instead of “pregnant women” except when an article was quoted directly.

2.0 Background

The Centers for Disease Control and Prevention (CDC) report that, in the year 2020, there were over 91,000 drug overdose deaths in the United States (Centers for Disease Control and Prevention, 2021). Of those deaths, nearly 75% involved the use of opioids. According to the same CDC report, there have been three notable “waves” of this crisis. The first wave began in 1999 with a stark increase in the prescription of opioids by medical professionals. The second wave began in 2010 when there was a rise in the number of heroin-related deaths. In 2013 the third wave of opioid overdose deaths in the United States was related mostly to the use synthetic opioids, such as fentanyl (Centers for Disease Control and Prevention, 2021).

2.1 Public Health Significance and Rationale

It is critical to address the use of opioids during pregnancy, as it is a growing issue which presents major health risks to both pregnant people and infants. These risks include, but are not limited to, maternal mortality, low birth weight, preterm birth, and neonatal abstinence syndrome (NAS) (Centers for Disease Control, 2020).

Due to the increase of opioid prescriptions, there has been a notable increase in cases of opioid use during pregnancy in the United States over the last 30 years. A study by Ko et al. (2020) analyzed data from the 2019 Pregnancy Risk Assessment Monitoring System (PRAMS) survey. PRAMS is designed to monitor the self-reported experiences of pregnant and post-partum people in 32 jurisdictions across the United States. Additionally, the authors of this study also surveyed

the same population in two jurisdictions that do not participate in PRAMS (Ko et al., 2020). The surveys found that, of 20,643 respondents, 6.6% reported using prescription opioids during their pregnancy (Ko et al., 2020). Of those, 91% reported that they received the opioids from their healthcare provider and 21% reported misusing the opioids during their pregnancy (Ko et al., 2020). Another study by Hirai et al. (2020) reviewed data provided by the Hospital Cost and Utilization Project (HCUP) database of hospital discharges. The data utilized in this study was obtained from 47 states and the District of Columbia (Hirai et al., 2020). The authors found that the number of pregnant people who had an opioid-related diagnosis at delivery increased by 131% between 2010 and 2017 (Hirai et al., 2021). The same study also found that, between 2010 and 2017, the national average of infants born with NAS increased from 4.0 per 100,000 live births to 7.3 per 100,000 live births (Hirai et al., 2021). The risk of death due to opioid overdose during pregnancy also has major public health implications. An analysis of data from the restricted National Vital Statistics mortality files found that, from 2017-2020, overdose deaths during pregnancy and/or post-partum in the United States saw a relative increase of 81% (Bruzelius & Martins, 2022).

Utilizing harm reduction in response to opioid use during pregnancy could significantly impact the health of this pregnant people who use opioids. Stigma surrounding drug use during pregnancy can create barriers to accessing quality prenatal care, which can then impact the health outcomes of both the pregnant person and infant involved (National Harm Reduction Coalition, 2021). Because opioid use during pregnancy is on the rise, health care professionals need to be equipped with multiple evidence-based approaches to address this issue.

2.2 Substance Use and the Social Ecological Framework

Even though substance use disorders are classified as medical conditions, and not the result of a “moral failing”, it is still very clear in the experiences of people who use drugs, that stigma and judgement exist on individual, interpersonal, and institutional levels (Weber et al., 2021). In the context of the Social Ecological Framework, there are myriad factors contributing to substance use disorders.

- **Individual Level Factors:** biologic and genetic susceptibility to addiction disorders, physical health (such as chronic pain disorders), mental health and wellbeing, socioeconomic status, and stress and trauma exposures (Jalali et al., 2020).
- **Interpersonal Level Factors:** a family history of substance use, peer pressure and social influence to use drugs, and access to drugs via friends, family members, coworkers, etc. (Jalali et al., 2020).
- **Community Level Factors:** the availability of treatment programs, access to quality health care, the stigma associated with accessing treatment for substance use disorders, and the social norms of the community or one’s culture (Jalali et al., 2020).
- **Policy Level Factors:** law enforcement and policing practices, educational campaigns for reducing substance use, insurance coverage policies, and availability of government sponsored treatment programs (Jalali et al., 2020).

2.3 Stigma

There are many reasons why a pregnant person who uses opioids might hesitate to disclose their drug use to their healthcare provider. Stigma, specifically applied to substance use disorders, “frames addiction as a personal choice reflecting moral failing and deficiency in will power” (Weber et al., 2021, p. 105). Stigma and judgement within the healthcare system demotivates pregnant people with opioid use disorder (OUD) from seeking prenatal care as well as substance use treatment. Internalized stigma, when a person comes to believe negative messages and stereotypes about themselves, leads to a belief that the injustices they experience (within and outside of the medical system) are deserved (Weber et al., 2021).

In addition to stigma and judgement, the criminalization of drug use in the United States creates a major barrier to seeking treatment (American Public Health Association, 2013). Every year, approximately 1.16 million people are arrested for drug-related offenses in the United States (National Center for Drug Abuse Statistics, n.d.). Not only do aggressive drug laws increase instances of violence and overdose, they also discourage people from seeking treatment for fear of judgement from health care providers or even legal consequences (American Public Health Association, 2013). Pregnant people who use drugs can often also face criminal charges. For example, in 2014 the state of Tennessee prosecuted a woman for assault for using drugs while pregnant. Additionally, the Supreme Courts of both Alabama and South Carolina ruled that pregnant people who use substances can be prosecuted, according to the statutes of child welfare in those states (Krans & Patrick, 2016). This criminalization of drug use during pregnancy may deter a patient from disclosing their opioid use to their healthcare provider, therefore creating a barrier to accessing quality prenatal care. Lacking prenatal care endangers the health of both the pregnant person and the infant (Krans & Patrick, 2016).

The American College of Obstetricians and Gynecologists (ACOG) address substance use disorder in pregnancy in their 2023 Policy Priorities, stating “ACOG joins every leading medical and public health organization in approaching the problem of drug and alcohol use during pregnancy as a health concern that’s best addressed through education, prevention and community-based treatment, not through punitive drug testing and reporting laws or criminal prosecution” (The American College of Obstetricians and Gynecologists, 2023).

This firm stance from ACOG promotes harm reduction approaches, rather than punitive ones, when addressing substance use with pregnant patients. Included in ACOG’s recommendations are expanding Medicaid coverage, increasing access to medically-assisted drug treatment, utilization of safe prescribing practices by medical professionals, and the use of psychosocial support programs. The motivation for promoting these practices is to increase access to, and compliance with, prenatal care among pregnant people who use drugs, as research shows this is the best way to improve birth outcomes in this population (The American College of Obstetricians and Gynecologists, 2023).

2.4 Harm Reduction

According to the National Harm Reduction Coalition, a national advocacy organization, “Harm reduction is a set of practical strategies and ideas aimed at reducing negative consequences associated with drug use. Harm Reduction is also a movement for social justice built on a belief in, and respect for, the rights of people who use drugs” (2019). The concept of harm reduction can be applied to many different public health issues, such as sexually transmitted infections, eating disorders, and COVID-19. When applied to the use of drugs, there are many different approaches

that fall under the realm of harm reduction. The National Harm Reduction Coalition (National Harm Reduction Coalition, 2019) lays out the principles of harm reduction, which include:

- Accepting that both legal and illegal drug use are part of our world
- Understanding that drug use is a complicated issue that requires a multi-faceted approach
- Empowering people who use drugs to have a voice in reducing harm in their own communities
- Not ignoring the harm and danger associated with using drugs
- Understanding the roles of poverty, racism, and other social inequities in dealing with "drug-related harm"

Within the context of treating OUD during pregnancy, the National Harm Reduction Coalition recommends many harm reduction strategies to pregnant people who use substances. Some general harm reduction strategies include: not using alone (in order to minimize the risk of overdose), setting limits on and keeping track of how much you use (if minimizing use is your goal), attending support groups such as Narcotics Anonymous, avoiding driving or making important decisions while using substances, accessing adequate prenatal care, and taking good care of your body (getting enough sleep, water, food, etc.) (National Harm Reduction Coalition, 2021). One recommendation made specific to the use of opioids during pregnancy is Medication for Opioid Use Disorder (MOUD). This is one of the most common harm reduction approaches for this population because detoxing during pregnancy is not recommended due to the risk of relapse and subsequent overdose (National Harm Reduction Coalition, 2019). These medications, methadone and buprenorphine, are commonly prescribed during pregnancy to treat OUD. This treatment method is addressed by many of the articles in this review. Another common harm

reduction approach for opioid use during pregnancy is the use of sterile needles when injecting drugs to avoid the spread of disease or infection (National Harm Reduction Coalition, 2021). It is important for health care providers to promote these harm reduction approaches in their practice while treating pregnant people with OUD. Additionally, providers should work to reduce stigma by avoiding harmful language (“addict”, “drug abuser”, “junkie”, etc.), and regarding their patients positively and with an understanding that their autonomy is paramount when making healthcare decisions (National Harm Reduction Coalition, 2021). Considering the backgrounds of pregnant OUD patients and utilizing trauma-informed care could also reduce harm and invite more of these patients to seek out prenatal care. Trauma-informed care can include practices such as allowing patients to choose how much they disclose about their substance use, establishing a welcoming and comfortable environment in the healthcare setting, using strengths-based language, and understanding that patients may have had negative interactions with health care providers in the past.

An article published in the National Library of Medicine called *Integrating Harm Reduction into Outpatient Opioid Use Disorder Treatment Settings* recommends several harm reduction strategies that should be utilized by health care professionals treating patients for OUD (Taylor et al., 2021). During review of the literature included in this essay, the author found that, while there is a broad spectrum of harm reduction approaches that can be utilized to address opioid use, only a some have been investigated to address opioid use specifically in the pregnant population. For this reason, the author chose to organize the harm reduction approaches discussed in the reviewed articles into five categories, based on the recommendations provided by Tayler et al. (2021). These categories are:

1. Opioid Overdose Prevention: this approach includes strategies such as prescribing naloxone to patients and developing a clinic-wide overdose response strategy.
2. Lowering Barriers to Accessing OUD Treatment: this may include providing “treatment on demand” (allowing walk-in appointments for MOUD, utilizing telemedicine, etc), accepting Medicaid and Medicare insurance, and increasing access to knowledge about treatment options for patients.
3. Patient-Centered Approaches to Treatment: this includes understanding the needs, desires, attitudes, and perspectives of the patients being treated.
4. Reducing Stigma: this approach involves the use of inclusive language and creating a safe, judgement-free space for patients to seek medical care for OUD during pregnancy.
5. Providing Harm Reduction Supplies: for example, distributing condoms, sterile needles, naloxone, and safe medication storage to patients.

3.0 Methods

This essay is a critical literature synthesis. Existing data was reviewed to explore harm reduction approaches to opioid use during pregnancy. All research was conducted via electronic databases. No subjects were used in this study, and Institutional Review Board approval was not required.

3.1 Inclusion Criteria

Only research articles published in English from 2013 through 2023 were included in the final review. This timeframe was chosen because 2013 began the “third wave” of opioid overdose deaths in the United States (Centers for Disease Control and Prevention, 2021). Studies had to address opioid use during pregnancy and a harm reduction approach had to be utilized or discussed. Studies had to take place in the United States. Observational studies, qualitative studies, and mixed methods studies were included. The review excluded commentaries, editorials, dissertations, and conference proceedings.

3.2 Information Sources

Medline (Ovid) and APA PsycINFO (Ovid) were searched; a health sciences librarian with systematic review experience developed all searches (see Appendix A). The date of the last search was 7 February 2023. A combination of MeSH terms and title, abstract, and keywords were used

to develop the initial Medline search. Concepts that made up the search were: pregnancy, opioids, and harm reduction. Strategies and date searched for each database can be found in Appendix A.

3.3 Study Selection

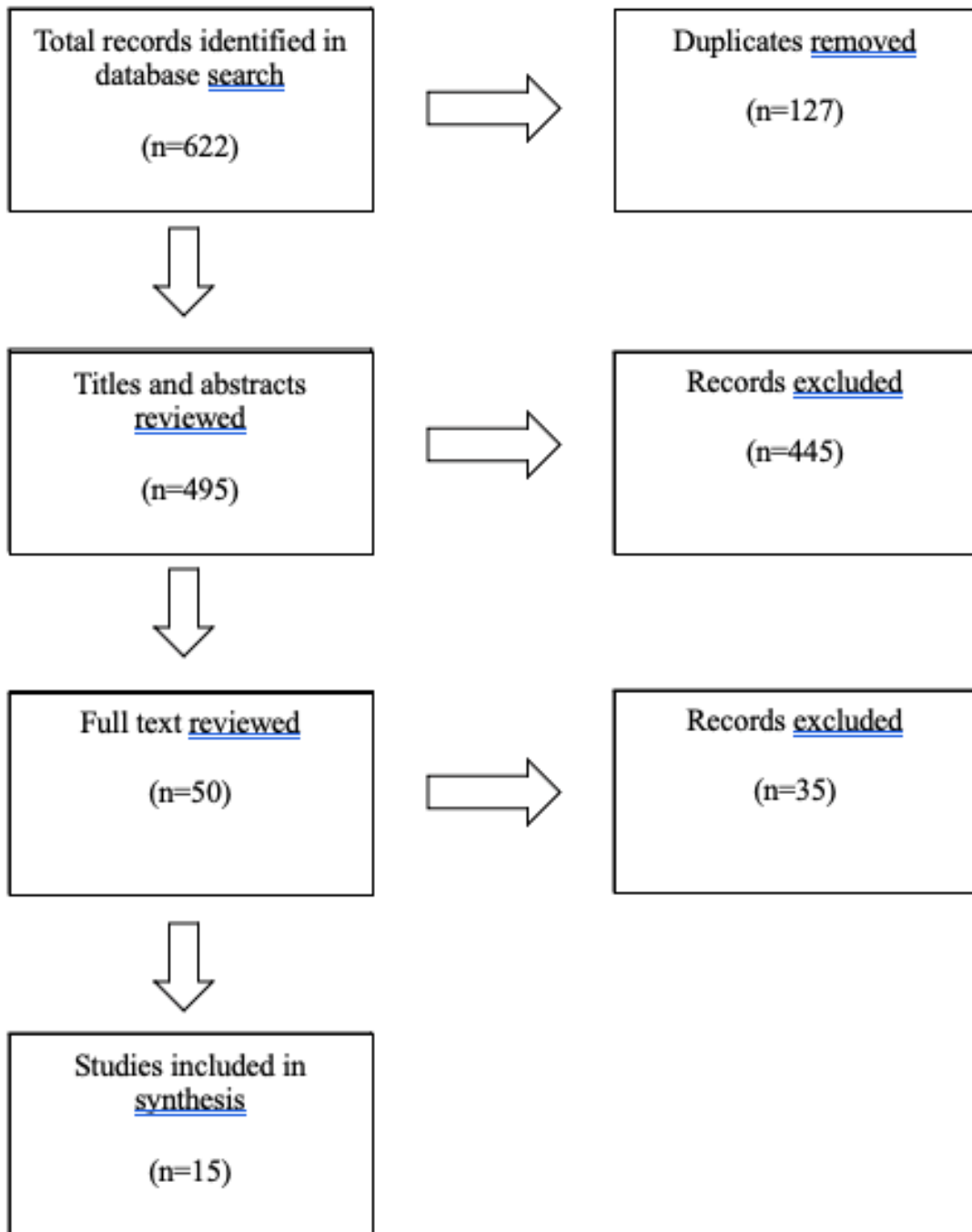
Data were compiled into an Excel workbook designed for single-author reviews. Study selection at the title/abstract level was performed in the Excel workbook (VonVille, 2022).

Exclusion Criteria for this review were:

- Studies focused only on fetal opioid exposure
- Studies focused on infectious disease testing
- Studies that did not include a pregnant population
- Incorrect study types (case report, clinical trials, etc.)
- Incorrect publication types (review, editorial, conference proceeding, etc.)
- Studies that did not take place in the United States
- Animal studies
- Studies that focused on drug testing during or after pregnancy
- Post-partum studies
- Studies that focused only on smoking cessation
- Incidence and prevalence studies
- Studies that utilized data preceding the year 2013

Study selection at the full text review level was performed external to the workbook with decisions being recorded in the workbook. The author reviewed all relevant research articles using the exclusion and inclusion criteria. Fifteen articles were selected as meeting the criteria and were included in the present literature synthesis.

Figure 1. PRISMA Search Results



4.0 Results

A total of 622 articles were identified in the initial search. After duplicates were removed, 495 article titles and abstracts were screened to identify articles that met the exclusion criteria, and 40 articles were retrieved for full text review. Of those 40, 15 were identified to be relevant for this review (Figure 1).

4.1 Harm Reduction Strategies Addressed

The 15 articles in this review addressed five different harm reduction strategies from the article by Taylor et al. (2021). The articles either studied the success of one or more of these strategies, or explored ways in which these strategies could be utilized to improve the current state of addiction care in the United States. The harm reduction strategies addressed in the fifteen articles are: opioid overdose prevention, lowering barriers to accessing OUD treatment, patient-centered approaches to treatment, reducing stigma, and providing harm reduction supplies. All articles addressed at least one of these strategies, while most articles discussed more than one, as explained in Table 1. One article focused on overdoes prevention (Gonzalez et al., 2022). Five articles focused on lowering barriers to accessing treatment (Bachhuber et al., 2017; Clemans-Cope et al., 2019; Knittel et al., 2022; Nguemeni Tiako et al., 2021; Syvertsen et al., 2021). Seven articles addressed patient-centered approaches to treatment (Banks et al., 2022; Brogly et al., 2018; Ellis et al., 2022; Guille et al., 2019; Hand et al., 2017; Mittal & Suzuki, 2015; Nowakowski et al., 2023). Three articles discussed reducing stigma (Banks et al., 2022; Schiff et al., 2022; Syvertsen

et al., 2021). Two articles studied the impact of providing harm reduction supplies to patients (Gonzalez et al., 2022; Grist et al., 2023).

Table 1. Reviewed Articles and Harm Reduction Strategies Addressed

Article	Overdose Prevention	Lowering Barriers to Accessing Treatment	Patient-Centered Approach to Treatment	Reducing Stigma	Providing Harm Reduction Supplies
(Bachhuber et al., 2017)		X			
(Banks et al., 2022)			X	X	
(Brogly et al., 2018)			X		
(Clemans-Cope et al., 2019)		X			
(Ellis et al., 2022)			X		
(Gonzalez et al., 2022)	X				X
(Grist et al., 2023)					X
(Guille et al., 2019)			X		
(Hand et al., 2017)			X		
(Knittel et al., 2022)		X			
(Mittal & Suzuki, 2015)			X		
(Nguemeni Tiako et al., 2021)		X			
(Nowakowski et al., 2023)			X		
(Schiff et al., 2022)		X		X	
(Syvertsen et al., 2021)				X	

4.1.1 Opioid Overdose Prevention

Gonzalez et al. (2022) sought to explore the factors that contributed to the prescription rates of Take-home Naloxone (THN) for pregnant patients in treatment for OUD. THN is a medication shown to effectively prevent overdose when administered quickly after a fatal dose of opioids has been consumed (Gonzalez et al., 2022). The factors explored include biomedical and sociodemographic factors such as age, race/ethnicity, type of MOUD treatment (methadone or buprenorphine), insurance status, and admission of intravenous drug use. The study found that, of 139 participants, 44 (or 31.6%) received a prescription for THN. The authors did not find significant differences between the prescribed and non-prescribed groups but did note that the median age of the patients with prescriptions was slightly higher. The authors also found that patients who used intravenous drugs were less likely to receive a prescription, despite being at a higher risk for overdose.

4.1.2 Lowering Barriers to Accessing OUD Treatment

Patients seeking treatment for opioid OUD, especially MOUD, experience myriad social, structural, and economic barriers. Studies that focused on this harm reduction approach sought to examine state and national policies, organizational structures, and the personal knowledge of and attitudes toward treatment options for OUD by both patients and health care providers.

Two studies in this review explored what barriers exist in access MOUD for Medicaid recipients. Bachhuber et al. (2017) sought to understand how different states' Medicaid coverage of methadone maintenance impacted the initiation of MOUD as a treatment for pregnant people with OUD. They looked at data from admissions to residential or out-patient treatment programs

for pregnant people between the ages of 18-44 who had Medicaid insurance (Bachhuber et al., 2017). They found that pregnant Medicaid recipients seeking treatment for OUD in states where Medicaid covered methadone maintenance were approximately 33% more likely to have MOUD as part of their treatment plan (Bachhuber et al., 2017). A similar study reviewed Medicaid claims from 72,086 pregnant people seeking treatment for OUD between 2014 and 2015 (Clemans-Cope et al., 2019). These Medicaid claims data came from three states, and northeastern state, a southwestern state, and a southern state (Clemans-Cope et al., 2019). They determined that pregnant Medicaid recipients with OUD experienced lower rates of prenatal care when compared to recipients with other substance use disorders (Clemans-Cope et al., 2019).

Knittel et al. (2022) studied MOUD access for incarcerated pregnant people in a North Carolina state women's prison. While this population differs greatly from the general population because they are not seeking OUD treatment in the community, this article discusses the utilization of MOUD, which is relevant to the discussion of harm reduction. Throughout the study period (2016-2019) the prison had a total of 12,470 people aged 18-45 enter the facility and had an average of 20-60 pregnant people in the prison daily. The authors found that only 40% of pregnant patients were treated with methadone or buprenorphine, while the remaining 60% received "non-standard treatment" (Knittel et al., 2022, pg. 4).

An article by Nguemeni Tiako et al. (2021) sought to understand the trends and characteristics that led to the administration of MOUD in pregnant people. They analyzed data from 42,239 "treatment episodes" (pg. 690) of pregnant people aged 15-49 nationwide from 2013-2017 obtained from the Substance Abuse and Mental Health Services Association. They found that less than half (47.4%) of these cases resulted in a prescription for MOUD (Nguemeni Tiako et al., 2021). They found that some factors contributing to a prescription for MOUD included being

higher in age (40-44 years), reporting daily substance use, and having a history of treatment for OUD (Nguemini Tiako et al., 2021). Factors that contributed to a failure to administer MOUD included having a criminal history or referral to the criminal-legal system, or seeking treatment in the Southern United States (Nguemini Tiako et al., 2021).

In an article by Schiff et al. (2022), the authors state that MOUD is an underutilized treatment option for OUD during pregnancy. By conducting qualitative interviews with recently pregnant people with OUD, the authors sought to determine what barriers were faced by patients seeking MOUD during pregnancy. The participants of this study reported that they felt a lack of agency to make treatment decisions for themselves because they were pregnant. They also reported fear around utilizing MOUD because of the health risks to their fetus, as well as potential loss of custody due to mandated reporting laws. They also reported that treatment centers, such as methadone clinics, did not provide “gender-responsive care” (pg. 5) and that strict rules around daily clinic visits and appointment times made maintaining treatment difficult in late pregnancy, as well as post-partum.

4.1.3 Patient-Centered Approaches to Treatment

There are many ways a health care provider could take a patient-centered approach when treating pregnant patients who use opioids. Studies that seek to understand the characteristics of this population can inform these approaches. Brogly et al. (2018) explored the characteristics and treatment outcomes of pregnant patients treated for OUD. This prospective cohort study recruited participants from a prenatal drug treatment program at Boston Medical Center. Of the 113 participants seeking MOUD were white and non-Hispanic (Brogly et al., 2018). Other characteristics they noted were past or current legal involvement or incarceration, hepatitis C

infection, and histories with sexual or physical abuse (Brogly et al., 2018). Approximately half of patients were treated with methadone while the other half were treated with buprenorphine (Brogly et al., 2018). The authors also found that the cohort of patients had a very small number of pregnancy losses, with a 90.8% rate of live births (Brogly et al., 2018). Hand et al. (2017) also explored demographic characteristics of pregnant patients with OUD, however this study focused on how demographics and treatment plans differed by census region. They explored data from the drug treatment program admissions of pregnant people in all 50 states, Washington DC, and Puerto Rico. In total, 8,656 admissions were included in this study. They found that patients from the southern United States were much more likely to report that prescription opioids were their “primary substance problem” compared to patients from the northeast (Hand et al., 2017). The authors also found that patients in southern states were much less likely to receive MOUD treatment when compared to other regions of the country (Hand et al., 2017).

When it comes to the use of MOUD, many pregnant patients find it difficult to decide whether to continue or taper their pharmacotherapy (Guille et al., 2019). This indecision can come from a lack of understanding about the risks and benefits of MOUD during pregnancy. Guille et al. (2019) studied the implementation of a shared decision-making aid in an out-patient obstetrics clinic. The 22 study participants were pregnant clinic patients with OUD taking methadone or buprenorphine for treatment. The authors found that the utilization of a shared decision-making tool between health care providers and patients eased this uncertainty, and helped patients make a decision that felt informed and considerate of their personal values and preferences (Guille et al., 2019).

In addition to the decision to start or continue MOUD, patients also face the challenge of adhering to their treatment plans throughout their pregnancies and into the postpartum period (Ellis

et al., 2022; Mittal & Suzuki, 2015). This lapse in continuity of MOUD could be the result of a lack of other care services designed to serve a population of pregnant patients with OUD. Ellis et al. (2022) looked at the utilization of an integrated care model that provided multiple services to patients in addition to MOUD, including prenatal and postpartum care services, mental health services, and other comprehensive services like assistance with scheduling appointments and provision of naloxone to prevent overdose. The 42 study participants were patients from an obstetrics/addiction clinic and were all over 18 years of age. The authors found that an average of six services were utilized by participants, and 69% of participants maintained their MOUD treatment at least 6 months postpartum (Ellis et al., 2022). A similar study by Mittal and Suzuki (2015) looked at a collaborative care model where pregnant OUD patients received their MOUD treatment from their prenatal care physician in the high-risk obstetrics practice at Brigham and Women's Hospital. Alongside their MOUD treatment, the 14 participants also received mental health services provided by a psychiatrist. In this study, 87.5% of participants continued their MOUD treatment postpartum (Mittal & Suzuki, 2015).

Another patient-centered approach explored in this review is pain-management. Managing pain of pregnancy, labor, and delivery is complicated when patients are being treated with MOUD because of a condition called hyperalgesia, which is defined as “increased sensitivity to feeling pain and an extreme response to pain” due to opioid use (Nowakowski et al., 2023, p. 2). Patients may also be hesitant to manage their pain using medications because of the risk of returning to opioid use (Nowakowski et al., 2023). A study by Nowakowski et al. (2023) sought to understand the perspectives of both patients and health care providers when it comes to obstetric pain management for patients undergoing MOUD treatment. The authors surveyed and performed qualitative interviews with 17 pregnant patients with OUD and 15 health care providers (5

obstetricians, 5 nurses, and 5 anesthesiologists) at the University of Pittsburgh Medical Center. The results showed that providers had a better understanding than patients about the importance and difficulties of pain management for this population (Nowakowski et al., 2023). The study also found that there was no consensus among providers about the use of opioids for pain management, but they did agree that non-opioid options should be available to these patients (Nowakowski et al., 2023). Overall, the study found that patients were experiencing confusion about their options for pain management, and that there should be more provider collaboration when it comes to pain management plans for pregnant patients undergoing MOUD treatment (Nowakowski et al., 2023).

4.1.4 Reducing Stigma

There were also studies in this review that addressed the harm reduction strategy of reducing stigma around opioid use and bias healthcare providers might have against patients seeking treatment for OUD. Banks et al. (2022) sought to explore how internalized stigma among pregnant people who use opioids might keep them from utilizing MOUD as part of their treatment plan. They surveyed 33 pregnant patients from an MOUD clinic in the midwestern United States. They found that study participants' attitudes toward MOUD were most impacted by a lack of understand of the safety and impacts of MOUD treatment. For example, half of participants reported that they were unsure about the proper dosage of MOUD and about its potential impacts on their fetus. They also found that subjective norms, or the belief that family, friends, and other might not approve of their use of MOUD, impacted their own perceptions of MOUD.

Syvertsen et al. (2021) broke stigma down into three categories: *structural stigma*, which referring to hospital and treatment center policies, insurance billing practices, and inadequate access to care because drug use is treated as an “exceptional condition” (pg. 3); *enacted stigma*

referring to the actions and attitudes of health care providers; and *anticipated and internalized stigma* referring to the fear patients have of facing judgement as well as the fear that their child may be born with Neonatal Abstinence Syndrome. The authors found that structural stigma impacted access to prenatal care, because patients often had to pay hundreds of dollars out of pocket to receive their buprenorphine or methadone treatments because they were not covered by insurance. They also found that many patients could not access treatment because obstetricians refused to treat patients who used drugs because of liability issues. Enacted stigma also impacted access to quality prenatal care. During qualitative interviews, 14 of the 28 participants of this study reported negative interactions with a health care provider. These negative interactions led to internalized stigma and shame among the participants of the study.

4.1.5 Providing Harm Reduction Supplies

Finally, two studies explored the approach of providing pregnant OUD patients with harm reduction supplies. As previously discussed, Gonzalez et al. (2022) focused on the prescription of take-home naloxone. Grist et al. (2023), however, discusses how the medication Buprenorphine-Naloxone, a medication used for opioid treatment, can be stored safely at home. Because of the risks associated with keeping opioid treatment medications at home, such as a child accidentally accessing them or the medications being stolen, this study looked at the success rate associated with providing patients with a lock box to store their medications. The authors of this study found that, before provision of the lock box, only 26.6% of study participants were practicing safe medication storage practices. However, once a lock box was provided, over 93% of participants used it and reported satisfaction with the lock box.

4.2 Addressing Levels of the Social Ecological Framework

As explained in Table 2, the articles reviewed in this essay describe harm reduction strategies which aim to address opioid use during pregnancy on different levels of the Social Ecological Framework. Ten articles explore approaches or interventions on the individual level (Banks et al., 2022; Brogly et al., 2018; Ellis et al., 2022; Gonzalez et al., 2022; Grist et al., 2023; Guille et al., 2019; Hand et al., 2017; Mittal & Suzuki, 2015; Schiff et al., 2022; Syvertsen et al., 2021). Six articles addressed approaches on the interpersonal level (Banks et al., 2022; Ellis et al., 2022; Guille et al., 2019; Nowakowski et al., 2023; Schiff et al., 2022; Syvertsen et al., 2021). Ten articles addressed the organizational level (Banks et al., 2022; Ellis et al., 2022; Gonzalez et al., 2022; Guille et al., 2019; Knittel et al., 2022; Mittal & Suzuki, 2015; Nguemini Tiako et al., 2021; Nowakowski et al., 2023; Schiff et al., 2022; Syvertsen et al., 2021). None of the articles in this review explored approaches or interventions on the community level of the social ecological framework. Four articles addressed approaches on the policy level (Bachhuber et al., 2017; Clemans-Cope et al., 2019; Hand et al., 2017; Knittel et al., 2022).

Table 2. Reviewed Articles and Levels of Social Ecological Framework Addressed

Article	Individual	Interpersonal	Organizational	Community	Policy
(Bachhuber et al., 2017)					X
(Banks et al., 2022)	X	X	X		
(Brogly et al., 2018)	X				
(Clemans-Cope et al., 2019)					X
(Ellis et al., 2022)	X	X	X		
(Gonzalez et al., 2022)	X		X		
(Grist et al., 2023)	X				
(Guille et al., 2019)	X	X	X		
(Hand et al., 2017)	X				X
(Knittel et al., 2022)			X		X
(Mittal & Suzuki, 2015)	X		X		
(Nguemni Tiako et al., 2021)			X		
(Nowakowski et al., 2023)		X	X		
(Schiff et al., 2022)	X	X	X		
(Syvertsen et al., 2021)	X	X	X		

Substance use disorders can be impacted by factors on many levels of the Social Ecological Framework (Jalali et al., 2020) (see section: Substance Use and the Social Ecological Framework). Similarly, the harm reduction strategies discussed in each of the fifteen articles included in this review aimed to address opioid use during pregnancy on one or more levels of this framework.

On the individual level, articles such as Brogly et al. (2018) and Hand et al. (2017) sought to understand the demographic characteristics (race, age, etc.) of patients seeking treatment for opioid use during pregnancy. Articles discussing individual attitudes and internalized stigma about MOUD utilization (Banks et al., 2022; Schiff et al., 2022; Syvertsen et al., 2021), would also be addressing an individual level factor.

Interpersonal level interventions were also addressed in this review. Examples of this include a shared decision-making model for health care providers to use with their patients (Guille et al., 2019) and an integrated care model with access to mental health services such a peer support groups (Ellis et al., 2022). Addressing stigmatizing interactions between patients and health care providers (Banks et al., 2022; Schiff et al., 2022; Syvertsen et al., 2021) also highlights an interpersonal level factor that impacts access to care for pregnant people who use opioids.

A large number of the articles reviewed for this essay (N=10) address organizational level factors and interventions. The shared decision-making model discussed in Guille et al. (2019) and the integrated care (Ellis et al., 2022) and collaborative care (Mittal & Suzuki, 2015) models discussed in these articles represent examples of organizational policies that promote harm reduction. Hospital and clinic policies that provide patients with harm reduction supplies, as discussed in Gonzalez et al. (2022) and Grist et al. (2023) also examples of organizational level interventions.

Bachhuber et al. (2017) and Clemans-Cope et al. (2019) both explored how Medicaid policies impacted access to MOUD for pregnant people. Other articles that explored policy level factors include Hand et al. (2017), which explored how pregnant people from different regions of the United States (therefore interacting with different state policies) experienced OUD treatment, and Knittel et al. (2022) which explored how MOUD treatment was administered in a prison facility.

No articles explicitly aimed to address interventions or factors on the community level of the Social Ecological Framework.

5.0 Discussion

The objective of this essay was to synthesize all existing literature on harm reduction approaches to opioid use during pregnancy in the United States and to understand how these approaches fit into the Social Ecological Framework. While many articles exist on harm reduction strategies for the general population, far fewer explored these strategies for pregnant populations. While reviewing the literature, the author noted some recurring themes throughout the fifteen articles included and gaps in the field of harm reduction research for pregnant populations.

Most articles available exploring harm reductions approaches to opioid use during pregnancy in the United States discuss the utilization of MOUD. In this review, 11 of the 15 articles included discuss MOUD. While MOUD is a widely accepted treatment plan for opioid use during pregnancy, and should continue to be explored, much less research currently exists exploring other harm reduction approaches for pregnant people who use opioids. Additionally, the themes explored in some of these articles show that MOUD on its own is not an adequate harm reduction approach. The utilization of a shared decision-making tool (Guille et al., 2019) allowed patients to have agency over their own healthcare decisions. And Ellis et al. (2022) found that incorporating mental health care and support measures in addition to MOUD increased the utilization and continuance of treatment for patients. There is not enough research available exploring how models like these could be expanded, and what impact they may have on MOUD utilization. Expanding these models could greatly reduce harm for pregnant OUD patients by increasing their confidence in seeking treatment and providing much needed information that would allow patients to make educated healthcare decisions.

Addressing stigma was also a common theme throughout the articles in this review. Despite the acknowledgment in many of the articles that stigma has a large negative impact on the health outcomes and prenatal care compliance of pregnant people who use opioids, only three articles (Banks et al., 2022; Schiff et al., 2022; Syvertsen et al., 2021) made reducing stigma the focus of their research. Accessing prenatal care is critical to the health of all pregnant people, especially those who use opioids (The American College of Obstetricians and Gynecologists, 2023). However, if these patients experience stigma, judgement, and possible criminal charges for disclosing their opioid use to their health care providers, they will be far more hesitant to seek this much needed care. Gynecologists and other health care professionals should be trained on how to reduce stigma and create welcoming environments for their opioid using patients.

Evidence shows that there is a racial disparity when it comes to the use of MOUD. Black non-Hispanic and Hispanic people are far less likely than white people to be treated with MOUD when experiencing OUD during pregnancy (Schiff et al., 2020). While several articles reviewed for this essay explored how MOUD could be utilized to treat pregnant people who use opioids, none discussed this racial disparity. Further exploration of how this disparity impacts the health outcomes of pregnant people and infants of color could better inform future research and practice related to harm reduction and opioid use during pregnancy. Additionally, there were no articles found addressing other marginalized populations, such as the LGBTQIA+ community, disabled people, or other racialized groups. Poverty and other social factors were also not addressed. Further research is needed to explore how marginalization and multiple marginalization impacts care for pregnant OUD patients, and how harm reduction approaches can be made culturally appropriate for different populations.

As previously noted in this essay (see section: Addressing Levels of the Social Ecological Framework), no articles focused on harm reduction strategies on the community level of the social ecological framework. Strategies such as providing safe drug disposal facilities, addressing geographical access to treatment, providing transportation to treatment, and addressing cultural and social norms around opioid use (Jalali et al., 2020) could have a great impact on the health and wellness of pregnant people seeking care for OUD. Safe drug disposal and sterile needle exchanges in communities with high rates of opioid use would create safer environments and reduce the spread of infection and disease for this population. Building more health clinics and providing access to transportation, especially in lower income areas, would lower barriers to accessing prenatal care and substance use treatment. As previously noted, addressing marginalization and creating harm reduction approaches that are culturally appropriate would also fall on the community level of the social ecological framework. Community level interventions are needed to increase the overall impact of harm reduction strategies in this population.

Overall, there were many harm reduction strategies that were not addressed in the articles included in this review. It has been found that a wide range of harm reduction strategies can be implemented for the larger population of people who use opioids. These strategies should also be explored for utilization in the pregnant population as well.

5.1 Limitations

There are several limitations in this critical literature synthesis. First, the author is the only person who reviewed the articles, allowing for personal bias to impact the selection process. Second, only two data bases were utilized in the literature search, and it cannot be determined with

100% certainty that all relevant research articles were reviewed for this essay. For the purposes of this essay, only observational, qualitative, and mixed methods studies were reviewed. This means that studies which may have discussed harm reduction strategies but used different study designs, such as clinical trials or case reports, were not included. This could have had an impact on the synthesis of literature for this topic.

6.0 Conclusion

Overall, the results of this critical literature synthesis reveal that, while MOUD is a widely accepted treatment for OUD during pregnancy, other harm reduction strategies are underutilized by medical professionals. More research is needed in the areas of reducing stigma and how harm reduction strategies can be utilized in concurrence with MOUD to create more robust health care approaches for this population. The studies in this review also failed to address racial disparities in the treatment of OUD during pregnancy. Further analysis of these disparities, as well as exploration of community level interventions would contribute to better treatment strategies for pregnant people who use opioids.

There was a lack of qualitative research in this review, with many studies opting for statistical analysis. The few studies that did utilize qualitative methods provided much needed insight into the perspectives and experiences of pregnant people who use opioids. More qualitative studies in this area would shed much needed light on how to better meet the needs of this population.

In conclusion, while the research fields of harm reduction and of opioid use during pregnancy have shown major advancement, more research about utilizing harm reduction for the pregnant OUD population is needed to address this growing public health problem.

Appendix A Search Strategies

Table 3. Summary of Literature Databases Searched

Table	Vendor/ Interface	Database	Date searched	Database update	Searcher(s)
1a	Ovid	Medline	7 February 2023	1946 to February 06, 2023	Helena M. VonVille; Courtney J. Yoder
1b	Ovid	APA PsycInfo®	7 February 2023	1806 to January Week 5 2023	Helena M. VonVille; Courtney J. Yoder

Table 4. Medline Search Strategy

Provider/Interface	Ovid
Database	Medline®
Date searched	February 7, 2023
Database update	1946 to February 06, 2023
Search developer(s)	Helena M. VonVille; Courtney J. Yoder
Limit to English	Yes
Date Range	2013-2023
Publication Types	No limit by publication type
Search filter source	https://www.yopl.info/post/ovid-medline-research-methodology-search-filters-and-a-couple-of-nifty-limits

1.	Pregnancy/
2.	Pregnant Women/
3.	(pregnancy or pregnant).ti,ab,kf.
4.	1 or 2 or 3
5.	heroin dependence/ or morphine dependence/ or narcotic-related disorders/ or Opioid Epidemic/ or opioid-related disorders/ or opium dependence/ or opiate overdose/
6.	"Analgesics, Opioid"/ or Codeine/ or Dihydromorphine/ or Ethylmorphine/ or Heroin/ or Hydrocodone/ or Hydromorphone/ or Morphine/ or Morphine Derivatives/ or Oxycodone/ or Oxymorphone/ or Thebaine/ or Narcotics/
7.	(Codeine or Dihydromorphine or Ethylmorphine or Heroin or Hydrocodone or Hydromorphone or Morphine or Oxycodone or Oxymorphone or Thebaine or Narcotics or opiate or opiates or opioid or opioids or opium or Vicodin).ti,ab,kf,rn.
8.	5 or 6 or 7
9.	4 and 8
10.	Harm Reduction/
11.	Needle-Exchange Programs/

12.	((harm adj2 reduction) or (needle* adj3 exchange*) or methadone or suboxon or (medical* adj3 detox*)),ti,ab,kf.
13.	10 or 11 or 12
14.	(9 and 13) not (exp "Animals"/ not "Humans"/)
15.	14 not ((exp africa/ or exp asia/ or exp australia/ or exp canada/ or exp central america/ or exp europe/ or exp south america/) not (north america/ or exp united states/))
16.	limit 15 to english language
17.	limit 16 to yr="2013 - 2023"

Table 5. APA PsycInfo Search Strategy

Provider/Interface Ovid
 Database APA PsycInfo
 Date searched February 7, 2023
 Database update 1806 to January Week 5 2023
 Search developer(s) Helena M. VonVille; Courtney J. Yoder
 Limit to English Yes
 Date Range 2013-2023
 Publication Types Journal articles only
 Search filter source No filter used

1	pregnancy/ or adolescent pregnancy/
2	pregnancy outcomes/ or obstetrical complications/
3	(pregnancy or pregnant).ti,ab,id.
4	1 or 2 or 3
5	"opioid use disorder"/ or heroin addiction/ or morphine dependence/
6	opiates/ or codeine/ or fentanyl/ or heroin/ or morphine/ or oxycodone/
7	narcotic drugs/
8	(Codeine or Dihydromorphine or Ethylmorphine or fentanyl or Heroin or Hydrocodone or Hydromorphone or Morphine or Oxycodone or Oxymorphone or Thebaine or Narcotics or opiate or opiates or opioid or opioids or opium or Vicodin).ti,ab,id.
9	5 or 6 or 7 or 8
10	4 and 9
11	harm reduction/ or risk management/ or needle exchange programs/
12	((harm adj2 reduction) or (needle* adj3 exchange*) or methadone or suboxon or (medical* adj3 detox*)).ti,ab,id.
13	11 or 12

14	10 and 13
15	14 not ((albanian or arabic or bulgarian or catalan or chinese or croatian or czech or danish or dutch or estonian or farsi iranian or finnish or french or georgian or german or greek or hebrew or hindi or hungarian or italian or japanese or korean or lithuanian or malaysian or nonenglish or norwegian or polish or portuguese or romanian or russian or serbian or serbo croatian or slovak or slovene or spanish or swedish or turkish or ukrainian or urdu) not English).lg.
16	limit 15 to yr="2013 - 2023"
17	limit 16 to all journals
18	17 not ("35123110" or "31358546" or "28574738" or "36594172" or "25592332" or "25124257" or "24066650" or "29200050" or "27723956" or "26290480" or "24983462" or "28018795" or "26869865" or "34965841" or "31855342" or "32146140" or "35568062" or "27773527" or "24716256" or "30133422" or "30133420" or "30036346" or "29664447" or "29664446" or "36541939" or "36541938" or "36549931" or "25735544" or "29135769" or "34118695" or "25199822" or "36515541" or "29719345" or "27687214" or "25189695" or "33345932" or "31292149" or "24141658" or "30489344" or "25836317" or "31809398" or "29263124" or "28994902" or "22926004" or "27889436" or "32972643" or "30446331" or "30092925" or "30078349" or "27547489" or "29155919" or "28075537" or "25150272" or "30204704" or "23550533" or "31258036" or "32217961" or "31323217" or "34520702" or "25552821" or "25834439" or "23288871" or "32550674" or "27564423" or "31294522" or "35149613" or "30677745" or "31132947" or "35165223" or

<p>"31573166" or "26011156" or "35916416" or "30665607" or "23851907" or "27595432" or "25724508" or "25747920" or "31251931" or "36045026" or "25559697" or "31421639" or "33435699" or "23639593" or "34282081" or "29913015" or "23397092" or "23617867" or "24312668" or "24702686" or "34556799" or "31425444" or "22815312" or "30204694" or "31479216" or "30418335" or "35972153" or "34510828" or "30170857" or "36001312" or "23398230" or "27738550" or "36345125" or "30996615" or "32805259" or "24746901" or "35029937" or "32146833" or "24248468" or "23845658" or "23072871" or "36001432" or "29075045" or "31544230" or "26770721" or "27886650" or "31831010" or "29429442" or "33567322" or "29520355" or "36351448" or "35123114" or "26457976" or "30669023" or "36106254" or "33880737" or "27009496" or "23851364" or "29227236" or "30379779" or "33724184" or "35396255" or "36224335" or "33234803" or "36730907" or "28562267" or "32970505" or "31038354" or "36101566" or "32448551" or "32928272" or "34273481" or "26477866" or "28697916" or "28161143" or "35308316" or "33060464" or "31857932" or "33526111" or "35263646" or "29068826" or "29595995" or "23314711" or "33716765" or "26154531" or "23523131" or "27748174" or "31244358" or "27907936" or "32468826" or "30248201" or "25337527" or "31068095" or "28188773" or "35438758" or "29747726" or "28829626" or "30204703" or "23577898" or "36628440" or "24120973" or "26232620" or "23279924" or "24099621" or "31010564" or "33676071" or "26908300" or "27287965" or "24524321" or "28079573" or "36219099" or "28075535" or "29413437" or "36562462" or "32101312" or</p>
--

"28536980" or "28187838" or "35369381" or "33807265" or "35758300" or "25450508" or "29073515" or "25062111" or "28406856" or "30712404" or "35074696" or "32683223" or "34599069" or "25070299" or "32484968" or "29979890" or "25402596" or "25354916" or "31564069" or "35772183" or "27614330" or "26295509" or "26914546" or "34033170" or "30969219" or "32303761" or "25758627" or "31521952" or "33843703" or "35174112" or "25808363" or "31005380" or "23930558" or "33345989" or "28203387" or "23389850" or "36745179" or "31734383" or "31393318" or "31600325" or "29155916" or "29112519" or "29372750" or "23666580" or "33462809" or "29195088" or "33538695" or "33345863" or "25915141" or "35750550" or "23531704" or "30711195" or "32753708" or "24113212" or "32958331" or "24195801" or "27636694" or "27636691" or "31415268" or "35396270" or "32142018" or "36301544" or "31653311" or "26186388" or "32838987" or "26985649" or "32826620" or "27729254" or "25599433" or "29521669" or "32641774" or "24246372" or "25460252" or "25145717" or "28867064" or "23059064" or "31034790" or "25656717" or "34255008" or "31952630" or "23734878" or "32052397" or "26212632" or "25622120" or "31343717" or "31439335" or "24366859" or "33165953" or "25062519" or "26672650" or "29326869" or "30511742" or "35403199" or "24845488" or "27723910" or "34400110" or "29035158" or "34855325" or "25665273" or "23314713" or "36269982" or "35490184" or "30415896" or "32186745" or "27974484" or "23772177" or "26020157" or "32670993" or "33306115" or "33706349" or "32898122" or "31692133" or "30714249" or "29580450" or "27199497" or

"26512202" or "36662775" or "31960750" or "30905231" or "23931660" or "30228577" or "23416427" or "31987751" or "31063550" or "27064247" or "24953167" or "28699096" or "34991713" or "28426507" or "36041008" or "32550673" or "32797175" or "33771277" or "24019057" or "30616487" or "29933819" or "28303199" or "31855918" or "32539126" or "36202398" or "34320536" or "25022635" or "31599845" or "35522126" or "24020477" or "28519244" or "32975850" or "31197827" or "29601303" or "33408510" or "34116817" or "33455473" or "30755340" or "28561914" or "30422365" or "30711196" or "34098304" or "23219678" or "36607200" or "33716726" or "28086944" or "36619511" or "33590310" or "23999378" or "35277115" or "32453384" or "29995730" or "33845029" or "35341614" or "35015949" or "25593952" or "34304335" or "26879874" or "29694295" or "28024988" or "23337845" or "30567886" or "33321531" or "28252898" or "34353655" or "32194251" or "30791974" or "23775478" or "31361590" or "34155161" or "28292795" or "34348734" or "23972743" or "34659831" or "32681781" or "31517766" or "23727040" or "36449419" or "23187048" or "35050354" or "32141128" or "34537839" or "35217800" or "28160896" or "24845493" or "27083254" or "33775446" or "35577664" or "30419913" or "24247147" or "23822191" or "29527296" or "31734808" or "29048415" or "24588273" or "31376396" or "31092079" or "34978244" or "33227221" or "28543191" or "23654341" or "25844370" or "33049155" or "32985461" or "34126203" or "29740196" or "23632726" or "26514156" or "30205307" or "34102337" or "32682328" or "30089441" or "33812002" or "36642778" or "26610304" or

	"33094005" or "34849047" or "24685460" or "32359675" or "32470840" or "26432025" or "25569005" or "33865673" or "34455101" or "25735465" or "28755770" or "26315948" or "29073311" or "25183042" or "23161599" or "30844221" or "25323126" or "33064777" or "34286886" or "27679504" or "33137567" or "29723483" or "28709965" or "26582303" or "24945162" or "34231914" or "27223595" or "34953637" or "32232496").pm.
--	--

Bibliography

- American Public Health Association. (2013, November 5). *Defining and Implementing a Public Health Response to Drug Use and Misuse*. Wwww.apha.org. <https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/08/08/04/defining-and-implementing-a-public-health-response-to-drug-use-and-misuse#:~:text=Criminalization%20of%20substance%20use%20further>
- Bachhuber, M. A., Mehta, P. K., Faherty, L. J., & Saloner, B. (2017). Medicaid Coverage of Methadone Maintenance and the Use of Opioid Agonist Therapy Among Pregnant Women in Specialty Treatment. *Medical Care*, 55(12), 985–990. <https://doi.org/10.1097/mlr.0000000000000803>
- Banks, D. E., Fentem, A., Li, X., Paschke, M., Filiatreau, L., Woolfolk, C., & Cavazos-Rehg, P. (2022). Attitudes Toward Medication for Opioid Use Disorder Among Pregnant and Postpartum Women and People Seeking Treatment. *Journal of Addiction Medicine, Publish Ahead of Print*. <https://doi.org/10.1097/adm.0000000000001113>
- Brogly, S. B., Saia, K. E., Werler, M. M., Regan, E., & Hernández-Díaz, S. (2018). Prenatal Treatment and Outcomes of Women With Opioid Use Disorder. *Obstetrics & Gynecology*, 132(4), 916–922. <https://doi.org/10.1097/aog.0000000000002881>
- Bruzelius, E., & Martins, S. S. (2022). US Trends in Drug Overdose Mortality Among Pregnant and Postpartum Persons, 2017-2020. *JAMA*, 328(21), 2159. <https://doi.org/10.1001/jama.2022.17045>
- Centers for Disease Control and Prevention. (2020). *Addressing Women & Infants in the U.S. Opioid Crisis Response*. Wwww.cdc.gov; CDC. <https://www.cdc.gov/reproductivehealth/maternalinfanthealth/substance-abuse/opioid-use-disorder-pregnancy/index.html>
- Centers for Disease Control and Prevention. (2021, June 17). *Understanding the Epidemic | CDC's Response to the Opioid Overdose Epidemic | CDC*. Wwww.cdc.gov; CDC. <https://www.cdc.gov/opioids/basics/epidemic.html>
- Clemans-Cope, L., Lynch, V., Howell, E., Hill, I., Holla, N., Morgan, J., Johnson, P., Cross-Barnet, C., & Thompson, J. A. (2019). Pregnant women with opioid use disorder and their infants in three state Medicaid programs in 2013–2016. *Drug and Alcohol Dependence*, 195, 156–163. <https://doi.org/10.1016/j.drugalcdep.2018.12.005>
- Ellis, L. P., Parlier-Ahmad, A. B., Scheikl, M., & Martin, C. E. (2022). An Integrated Care Model for Pregnant and Postpartum Individuals Receiving Medication for Opioid Use Disorder. *Journal of Addiction Medicine, Publish Ahead of Print*. <https://doi.org/10.1097/adm.0000000000001052>

- Gonzalez, A., Arlandson, M., Patel, A., & Premkumar, A. (2022). Predictive factors associated with take-home naloxone prescription among pregnant people admitted for management of opioid use disorder. *American Journal of Perinatology*. <https://doi.org/10.1055/a-1975-4534>
- Grist, Thakkar, B., Dacha, P., Lutins, E., Maxwell, M., & Martin, C. E. (2023). Harm Reduction Approach to Increasing Self-reported Safe Medication Storage Among Pregnant and Parenting People Receiving Opioid Use Disorder Treatment. *Journal of Addiction Medicine*, 17(2), 215–.
- Guille, C., Jones, H. E., Abuhamad, A., & Brady, K. T. (2019). Shared Decision-Making Tool for Treatment of Perinatal Opioid Use Disorder. *Psychiatric Research and Clinical Practice*, 1(1), 27–31. <https://doi.org/10.1176/appi.prcp.20180004>
- Hand, D. J., Short, V. L., & Abatemarco, D. J. (2017). Substance use, treatment, and demographic characteristics of pregnant women entering treatment for opioid use disorder differ by United States census region. *Journal of Substance Abuse Treatment*, 76, 58–63. <https://doi.org/10.1016/j.jsat.2017.01.011>
- Hirai, A. H., Ko, J. Y., Owens, P. L., Stocks, C., & Patrick, S. W. (2021). Neonatal Abstinence Syndrome and Maternal Opioid-Related Diagnoses in the US, 2010-2017. *JAMA*, 325(2), 146. <https://doi.org/10.1001/jama.2020.24991>
- Jalali, M. S., Botticelli, M., Hwang, R. C., Koh, H. K., & McHugh, R. K. (2020). The opioid crisis: a contextual, social-ecological framework. *Health Research Policy and Systems*, 18(1). <https://doi.org/10.1186/s12961-020-00596-8>
- Knittel, A. K., Swartzwelder, R. A., Zarnick, S., Tsujimoto, T. H. M., Horne, T., Lin, F.-C., Edwards, J., Amos, E., Alexander, J., Thorp, J., & Jones, H. E. (2022). Medications for opioid use disorder during pregnancy: Access and continuity in a state women’s prison facility, 2016–2019. *Drug and Alcohol Dependence*, 232, 109308. <https://doi.org/10.1016/j.drugalcdep.2022.109308>
- Ko, J. Y., D’Angelo, D. V., Haight, S. C., Morrow, B., Cox, S., Salvesen von Essen, B., Strahan, A. E., Harrison, L., Tevendale, H. D., Warner, L., Kroelinger, C. D., & Barfield, W. D. (2020). Vital Signs: Prescription Opioid Pain Reliever Use During Pregnancy — 34 U.S. Jurisdictions, 2019. *MMWR. Morbidity and Mortality Weekly Report*, 69(28), 897–903. <https://doi.org/10.15585/mmwr.mm6928a1>
- Krans, E. E., & Patrick, S. W. (2016). Opioid Use Disorder in Pregnancy. *Obstetrics & Gynecology*, 128(1), 4–10. <https://doi.org/10.1097/aog.0000000000001446>
- Mittal, L., & Suzuki, J. (2015). Feasibility of collaborative care treatment of opioid use disorders with buprenorphine during pregnancy. *Substance Abuse*, 38(3), 261–264. <https://doi.org/10.1080/08897077.2015.1129525>
- National Center for Drug Abuse Statistics. (n.d.). *Drug Related Crime Statistics [2023]: Offenses Involving Drug Use*. NCDAS. <https://drugabusestatistics.org/drug-related-crime->

statistics/#:~:text=1.16%20million%20Americans%20are%20arrested%20annually%20for%20drug%20related%20offenses.

National Harm Reduction Coalition. (2019). *Principles of Harm Reduction*. Harmreduction.org. <https://harmreduction.org/about-us/principles-of-harm-reduction/>

National Harm Reduction Coalition. (2021). *Pregnancy and Substance Use: A Harm Reduction Toolkit*. Harmreduction.org. <https://harmreduction.org/issues/pregnancy-and-substance-use-a-harm-reduction-toolkit/#section2>

Nguemeni Tiako, M. J., Friedman, A., Culhane, J., South, E., & Meisel, Z. F. (2021). Predictors of Initiation of Medication for Opioid Use Disorder and Retention in Treatment Among U.S. Pregnant Women, 2013–2017. *Obstetrics & Gynecology*, *137*(4), 687–694. <https://doi.org/10.1097/aog.0000000000004307>

Nowakowski, E., Dayananda, S., Morgan, M., Jarvis, O., Altamirano, V., LaSorda, K. R., Krans, E., & Lim, G. (2023). Obstetric pain management for pregnant women with opioid use disorder: A qualitative and quantitative comparison of patient and provider perspectives (QUEST study). *Addiction*. <https://doi.org/10.1111/add.16134>

Schiff, D. M., Nielsen, T., Hoepfner, B. B., Terplan, M., Hansen, H., Bernson, D., Diop, H., Bharel, M., Krans, E. E., Selk, S., Kelly, J. F., Wilens, T. E., & Taveras, E. M. (2020). Assessment of Racial and Ethnic Disparities in the Use of Medication to Treat Opioid Use Disorder Among Pregnant Women in Massachusetts. *JAMA Network Open*, *3*(5), e205734–e205734. <https://doi.org/10.1001/jamanetworkopen.2020.5734>

Schiff, D. M., Work, E. C., Muftu, S., Partridge, S., MacMillan, K. D. L., Gray, J. R., Hoepfner, B. B., Kelly, J. F., Greenfield, S. F., Jones, H. E., Wilens, T. E., Terplan, M., & Bernstein, J. (2022). “You have to take this medication, but then you get punished for taking it:” lack of agency, choice, and fear of medications to treat opioid use disorder across the perinatal period. *Journal of Substance Abuse Treatment*, *139*, 108765. <https://doi.org/10.1016/j.jsat.2022.108765>

Syvertsen, Toneff, H., Howard, H., Spadola, C., Madden, D., & Clapp, J. (2021). Conceptualizing stigma in contexts of pregnancy and opioid misuse: A qualitative study with women and healthcare providers in Ohio. *Drug and Alcohol Dependence*, *222*, 108677–108677. <https://doi.org/10.1016/j.drugalcdep.2021.108677>

Taylor, J. L., Johnson, S., Cruz, R., Gray, J. R., Schiff, D., & Bagley, S. M. (2021). Integrating Harm Reduction into Outpatient Opioid Use Disorder Treatment Settings. *Journal of General Internal Medicine*, *36*, 1–10. <https://doi.org/10.1007/s11606-021-06904-4>

The American College of Obstetricians and Gynecologists. (2023). *Substance Use Disorder in Pregnancy*. www.acog.org. <https://www.acog.org/advocacy/policy-priorities/substance-use-disorder-in-pregnancy>

VonVille, H. M. (2022, May 18). The Excel workbook for targeted or critical literature reviews. Project-Name-Excel-workbook-for-targeted-reviews.xlsx. Retrieved Month Day, Year, from https://pitt-my.sharepoint.com/:x/g/personal/hev8_pitt_edu/EbNr2HD1BGZPnHTJhJvmRzwBL3erYp8zvLkCGjKQOVT-PA?e=w03Tew

Weber, A., Miskle, B., Lynch, A., Arndt, S., & Acion, L. (2021). Substance Use in Pregnancy: Identifying Stigma and Improving Care. *Substance Abuse and Rehabilitation, Volume 12*, 105–121. <https://doi.org/10.2147/sar.s319180>