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PROCESSES USED BY MOTHERS IN OPIOID RECOVERY TO MANAGE THE  
NEEDS OF THE MATERNAL-INFANT DYAD:  
A GROUNDED THEORY STUDY

by

Nicole M. Mattson, MS, RN, CNS-BC

A Dissertation submitted to the Faculty of the Graduate School,  
Marquette University,  
in Partial Fulfillment of the Requirements for  
the Degree of Doctor of Philosophy

Milwaukee, Wisconsin

December 2021

ABSTRACT  
PROCESSES USED BY MOTHERS IN OPIOID RECOVERY TO MANAGE THE  
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A GROUNDED THEORY STUDY

Nicole M. Mattson MS, RN, CNS-BC

Marquette University, 2021

Maternal opioid use during pregnancy and the postpartum period has significant impact on the mother and infant. Maternal well-being and early maternal-infant contact can impact the early attachment and bonding of the dyad. Additionally, the stigma surrounding opioid use in pregnancy can have detrimental effects on the dyad during pregnancy and in the postpartum period.

Theory driven nursing interventions to promote mother-infant dyadic care for pairs impacted by maternal opioid use disorder (OUD) are needed. First, it was necessary to understand the current processes used by mothers with OUD to manage the unique needs of their dyad. The purpose of this study was to develop a situation specific theory of the processes used by women to meet the needs of the dyad impacted by OUD during pregnancy and the early postpartum period.

Mothers in opioid recovery, defined through self-identification and use of medication assisted treatment (MAT) throughout pregnancy and postpartum, were asked to participate in individual semi-structured intensive interviews. Principles of a constructivist grounded theory approach were followed.

Findings from this study identified six main processes that women in opioid recovery with MAT use to meet the needs of the maternal-infant dyad. Processes include, navigating social support, putting in the work of recovery, maintaining vigilance, performing self-cares, acquiring skills and knowledge, and advocacy. These processes were impacted by two personal modifying factors of a mother's previous experience with motherhood and their freshness in recovery.

This theory demonstrates the active engagement by mothers who use MAT for their recovery during their pregnancy, postpartum, and early motherhood period. With this increased understanding of the processes women engage in and their personal modifying factors, health care providers can guide development and implementation of support services that account for the work mothers are already doing. By increasing awareness of how actively engaged mothers who use MAT for OUD are during their recovery and pregnancy, it is possible to help reduce the stigma surrounding pregnancy in recovery and improve outcomes for the dyad.

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## **Chapter 1: Introduction**

The United States is currently experiencing an opioid epidemic; approximately 130 Americans die daily from an opioid overdose (Centers for Disease Control and Prevention [CDC], 2018b). Opioids are chemicals that reduce pain signals and feelings of pain in the body (Rizk et al., 2019). Due to their pain-relieving capabilities and ability to cause euphoria, opioids have the potential for misuse or abuse. Rates of opioid use have increased in both the general population, as well as the pregnant population. While the rate of opioid use in pregnancy is lower than in the general population, the rate of births complicated by maternal opioid use is rising and has quadrupled between the years of 1999 to 2014 (Massey et al., 2010; Smid et al., 2019). Pregnancy is a period of vulnerability for women and their fetus; with the addition of maternal opioid use during pregnancy and during the postpartum period women and infants are at increased vulnerability (Smid et al., 2019).

### **Opioid Use in Pregnancy**

Morphine was first isolated in 1804 and in 1874 heroin was first synthesized (Kocherlakota, 2014). As these medications increased in usage, there has been a steady increase in addiction, with periods of spikes in addiction to particular drugs. Women demonstrated addiction behaviors throughout the 19<sup>th</sup> century, and in 1875 the first report of neonatal withdrawal from opioids following birth was recorded-then referred to as 'congenital morphinism'. It was not until nearly 30 years later, in 1903, that the first neonate survived opioid withdrawal; today neonatal withdrawal is a treatable condition. To minimize negative effects of continued use of opioids during pregnancy, detoxification and opioid agonist medications have been utilized (Rausgaard et al., 2019).

By 1964, the opioid agonist, methadone, was used by mothers with opioid use disorder (OUD) during pregnancy and physicians believed it would curb addiction and have no effect on the newborn (Kocherlakota, 2014). Later, Buprenorphine began to be used in the United States in 2002 as a second opioid agonist option, however, use of both of these medications can lead to neonatal withdrawal, now known as neonatal abstinence syndrome (NAS) in newborns. Opioid agonists help minimize withdrawal symptoms in mothers and reduce the risk of maternal, fetal, obstetrical, and neonatal complications (Rausgaard et al., 2019). While opioid agonist medications may result in NAS, these medications have continued to be the preferred treatment over detoxification of the mother during pregnancy or the postpartum period. Use of these medications for treatment of opioid use disorder is known as Medication Assisted Treatment (MAT) and is preferred due to the high rate of maternal relapse associated with detoxification.

Since 1999, three distinct waves of opioid overdoses have occurred: 1) in 1999, a rise in overdose deaths due to prescription opioids; 2) in 2010, a rise in heroin overdose deaths; 3) and 2013, a rise in synthetic opioid (such as fentanyl) overdose deaths (Kocherlakota, 2014). These distinct waves demonstrate the various forms of opioid use and how the opioid epidemic continues to change overtime. In a study examining death certificates and live birth data from US National Vital Statistics System between 2007 and 2016, the pregnancy-associated mortality rate from opioid use more than tripled (1.3 to 4.2) (Gemmill et al., 2019). In 2016, the majority of pregnancy-associated deaths involving opioid use occurred during the pregnancy or within 42 days after birth (Gemmill et al., 2019). The Wisconsin Department of Health Services reported that the rate of deliveries with maternal OUD rose from 5 to 16.4 per 1,000 birth deliveries, from

2009-2014 (Wisconsin Department of Health Services, 2015). Approximately half of the pregnant women who experienced OUD gave birth to infants that displayed neonatal abstinence syndrome (Wisconsin Department of Health Services, 2015).

### **Existing Guidelines**

Collaboration among several professional healthcare organizations have resulted in published guidelines and recommendations for the healthcare management of pregnancies impacted by OUD, including the American College of Obstetricians and Gynecologists (ACOG), the American Society of Addiction Medicine (ASAM), American Academy of Pediatrics (AAP), the World Health Organization (WHO), the US Health and Human Services (US HHS), Substance Abuse and Mental Health Services Administration (SAMHSA), and Legal Action Center (American College of Obstetrics and Gynecology [ACOG], 2017; Hudak & Tan, 2012; Krans, Campopiano et al., 2019; Substance Abuse and Mental Health Services Administration [SAMHSA], 2016). These guidelines offered practice protocols focused on aspects of maternal OUD such as: 1) early identification and screening tools for opioid use, 2) use of Medication Assisted Treatment (MAT), 3) coupling of psychosocial treatment with MAT, and 4) guidelines from state and local jurisdictions for responses by child welfare agencies, providers and hospitals (SAMHSA, 2016).

While treatment guidelines and recommendations exist for pregnant individuals with OUD, only a portion of these patients actually received the recommended treatment during the perinatal period (Krans, Kim et al., 2019). Between 2009-2015, approximately 3.5% of all pregnant women had a diagnosis of OUD, yet 44.1% of these women meeting the criteria for OUD were not enrolled in a MAT program as recommended (Krans, Kim

et al., 2019). Less than half of the women received behavioral health counseling, as recommended per the guidelines in conjunction with MAT (Krans, Kim, et al., 2019; ACOG, 2017).

There is a need for collaboration amongst all individuals who come in contact with pregnant women with OUD. At times, tensions exist among all groups involved in the care of women and infants impacted by opioid use disorder, including patients, healthcare providers, and local and state government agencies. The priorities, values, and protocols for those engaged in treatment of the pregnant woman may be at odds with law enforcement and child welfare services (SAMHSA, 2016).

The federal legislation, Child Abuse and Prevention Treatment Act (CAPTA) Reauthorization Act of 2010, requires all states to have policies or procedures in place to notify Child Protective Services for any infant born affected by illegal substance use or with symptoms of withdrawal from maternal drug exposure (SAMHSA, 2016). As of March 1<sup>st</sup>, 2020, 23 states and the District of Columbia--including Wisconsin--consider illegal substance use during pregnancy a form of child abuse (Guttmacher Institute, 2020). Twenty-five states including the District of Columbia--including Wisconsin--require health care professionals to report suspected drug use during pregnancy (Guttmacher Institute, 2020). These mandatory reporting requirements may be detrimental to the patient provider-relationship, acting as a barrier to prenatal care for women who are using illegal substances (Rizk et al., 2019). Individuals with OUD fear removal of their child from parental custody, criminal punishment, and stigma or discrimination from healthcare providers (Fraser et al., 2007; Gueta, 2017; Marcellus, 2017; Stone, 2015). Because early prenatal care is vital in decreasing risks and improving

outcomes for mother-infant dyads impacted by opioid use disorder, these laws can be counterproductive and can increase risk (Stone, 2015).

### **Stigma**

Mothers with OUD have reported feeling judged or stigmatized by healthcare workers during the prenatal and postpartum period (Rockefeller et al., 2019). The stigma surrounding opioid use in pregnancy can have significant detrimental effects on the dyad during pregnancy and in the postpartum period. Mothers report isolating themselves and missing prenatal appointments in order to minimize detection of substance use due to stigma (Rockefeller et al., 2019). In 2013, as an effort to change stigmatizing behaviors, the International Drug Policy Consortium released a statement to the media and policy makers to heighten awareness of the stigmatizing language being used (SAMHSA, 2016). The statement criticized the use of highly stigmatizing words such as, “born addicted” and “oxy babies”, when discussing newborns with prenatal substance use exposure (SAMHSA, 2016, p. 5). This type of language has the potential to lead to discrimination and can lead to inappropriate care for the mother-infant dyad.

### **Maternal-Infant Dyad**

Early attachment of the infant to the mother and bonding of the mother to the infant is important in the cognitive, emotional, and social development of a child (Ainsworth, 1979; Bowlby, 1982). The first 12 weeks after birth of an infant has been shown to be a sensitive time for the mother-infant dyad (McNamara et al., 2019). Maternal well-being and early maternal-infant contact can impact the early attachment and bonding of the dyad (Kennell & Klaus, 1998; McNamara et al., 2019). A move toward promoting more contact between mother and infant in the immediate postpartum period has stimulated

research into potentially relying on more nonpharmacologic interventions for NAS, such as having the infant rooming in with mother, skin-to-skin, and Eat, Sleep, Console (Rockefeller et al., 2019). In a study by Fraser et al. (2007), both organizational barriers and nursing attitudes were found to negatively impact the parent-infant attachment relationship. Published evidence on the effectiveness of nonpharmacologic interventions for NAS is lacking.

While previous research has focused on processes for healthcare providers to care for women and their infants impacted by OUD during pregnancy and the early postpartum period, research has not focused on the processes utilized by the women themselves and how they manage pregnancy and the early postpartum period to meet the needs of their dyad. Previous research has not viewed mothers as active agents working to meet the needs of the dyad. This proposed study utilized grounded theory techniques to explore the processes that women with OUD use to manage the needs of the dyad during pregnancy and through the early postpartum period. The resulting grounded theory informs future development of nursing interventions or best practices to guide nursing care of dyads impacted by OUD during this time period. During this critical time of a national opioid crisis, theory-driven nursing care of the mother-infant dyad has the potential to impact families throughout pregnancy and the immediate postpartum period and have long lasting benefits for both mother and infant in the dyad.

### **Statement of the Problem**

While multiple theoretical frameworks exist specific to maternal-child care and substance use recovery, no one theoretical framework addresses the unique needs of the

maternal-infant dyad impacted by maternal opioid use disorder and the processes women use to meet the needs of the dyad.

### **Purpose of the Study**

The purpose of this study was to develop a situation specific theory of the processes used by women to meet the needs of the dyad impacted by OUD during pregnancy and the early postpartum period. Knowledge of these processes inform future development of nursing interventions aimed at supporting mothers' efforts in meeting the needs of the dyad.

### **Significance to Nursing**

Registered Nurses (RNs) are present during labor, delivery, and through the first postpartum days. RNs provide intimate and prolonged care for maternal-infant dyads impacted by opioid use. Therefore, changes in RN practice have the potential to shape the life course of the maternal-infant dyad affected by OUD by improving supportive care during the perinatal period. Modifiable variables of perinatal care of these dyads identified by Klaus and Kennell (1976) included hospital policy and stigmatizing behavior of health care providers; these factors still exist today.

Historically, infants that develop NAS have been cared for in a separate unit of the hospital for specialty medical and nursing care specific to the withdrawal process (Rockefeller et al., 2019). Little evidence has been published on the effectiveness of nonpharmacologic interventions in this population. While these studies promoted more contact between the mother and the infant for the benefit of the infant, little research looked at the impact on the mother or the dyad. Women with opioid use disorders often have impaired responsiveness and bonding with their infants after birth, which negatively

affects the neurodevelopment of infants and can delay or impair infant attachment (Mirick & Steenrod, 2016). Newborns exposed to opioids in utero may demonstrate signs of NAS, such as irritability, poor feeding, and difficulties with sleeping, within 48-72 hours after birth, and these behaviors can be stressful for mothers when they are able to be with the neonates during hospitalization and during first days at home (Klaman et al., 2017; Mirick & Steenrod, 2016). This increased stress due to the neonate behavioral symptoms of NAS can further complicate bonding for the mother.

Early nursing interventions to maintain close proximity of mother to child in the postpartum period may foster bonding and attachment and help women to transition to the role of motherhood, which may lead to decreased risks for suboptimal child development and maternal outcomes. There has been little focus on examining how the mother navigates pregnancy and the early postpartum period to meet the needs of the dyad. To promote health or wholeness of the dyad, the mother must be an agent of health for herself and the fetus or neonate, but that focus is not always represented in research nor in healthcare protocols. The ways in which a mother manages her opioid use recovery while meeting the needs of the dyad is important yet understudied. Due to the high level of vulnerability for poor outcomes in dyads impacted by maternal OUD, it is imperative to gain a better understanding of the processes used by these mothers navigating pregnancy and the early postpartum period so that new care practices can be developed to better support this maternal work. The use of grounded theory approach allowed for a deep, woman-centric understanding of these processes and led to construction of a situation specific theory.



### **Organization of the Study**

This research study is presented in five chapters. Chapter one includes the background of the study, statement of the problem, purpose of the study, and significance of the study to nursing. Elements in chapter one are expanded upon in the following chapter. Chapter two presents a review of the literature, which includes the philosophical underpinnings of grounded theory, an analysis of the concept of wholeness in the context of the maternal-infant dyad, maternal role attainment theory, attachment theory, family centered maternity care, Levine's conservation model, substance use and addiction in pregnancy, substance use recovery, substance use disorder in pregnancy, opioid use disorder in pregnancy, the harm reduction model, current treatment recommendations for mothers and infants impacted by opioid use disorder, and gaps in the literature. Chapter three describes the methodology used for this research study including the selection of participants, instrumentation, data collection, ethical considerations, and data analysis. Chapter four presents the study findings for the two research aims. Chapter five presents a discussion of the findings and relationship of findings to previous research; implications for nursing practice, nursing education, research, and vulnerable populations; limitations of the study; and recommendations for future research.

## **Chapter 2: Literature Review**

The following literature review presents an exploration of the salient constructs and theories shaping current understanding of maternal-infant care and maternal opioid use, which support the need for this grounded theory study. In order to align with a tenet of grounded theory, no research hypothesis is presented (Charmaz, 1990; Glaser, 1967; Strauss & Corbin, 1994). An analysis of the concept of wholeness within nursing and how it relates to maternal-infant dyadic care, theories that have impacted our understanding of maternity care, theories that have impacted our understanding of substance use, and current literature specific to the care of the mother-infant dyad impacted by maternal opioid use disorder are reviewed. A gap in understanding the processes through which women with opioid use disorder manage the needs of the maternal-infant dyad during pregnancy and the early postpartum period is explored.

### **Philosophical Underpinnings of Grounded Theory**

The roots of grounded theory were established during a time when rigor of qualitative studies was seen as questionable or that qualitative research was only a precursor to more rigorous quantitative studies (Charmaz, 2000). Glaser and Strauss are viewed as the pioneers of Grounded Theory from their work providing guidelines for systematic research and data analysis strategies applied to qualitative research (Charmaz, 2000). Glaser brought his experience with positivism from his prior methodological training in quantitative research and Strauss brought his background in field research and focus on symbolic interactionism (Charmaz, 2000). The original publications on grounded theory by Glaser and Strauss contained assumptions of both positivism and objectivism (Charmaz, 2000). While Glaser and Strauss eventually took their research

into slightly different directions, both continued to build on assumptions of an objective, external view of reality (Charmaz, 2000). Glaser's original assumptions that there is an objective reality that is observable by a neutral researcher and that an unbiased account of the data can be created are considered underpinnings of his grounded theory approach (Charmaz, 2000). When Strauss began working with Corbin, the assumptions of their approach to grounded theory moved to a postpositivist foundation (Charmaz, 2000). Their view continued to assume an external objective reality however, they believed a researcher could not be neutral; therefore, they focused on minimizing bias in the data collection through specific procedures and strategies (Charmaz, 2000). Due to their postpositivist view, they acknowledged that participants may hold a differing view of reality than does the researcher (Charmaz, 2000).

Charmaz introduced a third approach to grounded theory that aligned with constructivism (Charmaz, 2000). Constructivist grounded theory recognizes each person's firsthand knowledge of an empirical world, recognizes multiple realities, and has the assumption that reality is worth observing (Birks & Mills, 2015; Charmaz, 2000). Constructivism assumes that knowledge is cocreated by the viewer and the person being viewed. The focus is on understanding the participants' meanings of their reality (Charmaz, 2000). This aligns with a relativist epistemology (Birks & Mills, 2015). In constructivist grounded theory, the researcher is not a neutral observer, but is in relationship with the participants (Birks & Mills, 2015). Constructivist grounded theory maintains the need to study people in their natural settings and allows for utilization of the grounded theory strategies developed by Glaser, Strauss, and Corbin (Charmaz, 2000).

Symbolic interactionism stems from the pragmatist tradition, where the assumption is that the value of beliefs or ideas comes from their practical application (Charmaz, 2014). Reality is variable and can have multiple interpretations; truth is relative to what works and what is practical (Charmaz, 2014). Symbolic interactionism as a theoretical perspective describes a continuous and reciprocal process in which persons construct meanings through interactions with their environment (Charmaz, 2014). Through interaction, a person constructs meaning of themselves, reality, and society. Because of this dynamic process, an individual's interactions and meanings are shaped by their social and historical context (Charmaz, 2014). This perspective aligns with constructivist grounded theory through the importance of (1) creating shared meaning during data collection and analysis and (2) the importance of recognizing multiple realities and that these realities are impacted by context.

### **Philosophical Underpinnings of Nursing Philosophy: Theories Examining the Nature of Humans as Wholism**

Fawcett (1989) categorized nursing models into two sets of contrasting models: 1) organismic versus mechanistic and 2) change versus persistence models. In the organismic worldview, a person is not reducible into distinct and separate parts. Further, the whole of the person is more than the sum of their parts. Because a person cannot be reduced into separate parts, we are not able to predict behavior based on our knowledge of the discrete fragments. In contrast, the mechanistic view sees a person as “the sum of discrete parts and the whole can be predicted from knowledge of the parts” (Brouse, 1992, p. 326).

According to the change worldview, a person is continually in transition and progress is highly regarded. Within the persistence worldview, the natural state is seen as

stability with change only happening when it is needed for survival. Based on the worldviews in nursing theory, the view of wholeness as either a state of being or a process of becoming is in conflict and adds to the inconsistent definition of wholeness.

Nursing theories, such as Orem's Self-Care Deficit Theory, Neuman's System Model, Roy's Adaptation Model, Roger's Science of Unitary Irreducible Human Beings, Parse's Human Becoming Theory, and Newman's Theory of Health, utilize both concepts of wholeness and change within their definitions of health. Health, as defined by Newman, is "a pattern of evolving, expanding consciousness regardless of the form or direction it takes" (McEwen & Wills, 2007, p. 45). In Roy's Adaptation model, health is defined as, "a state and process of being and becoming an integrated and whole person. It is a reflection of adaptation, that is, the interaction of the person and the environment" (McEwen & Wills, 2007, p. 45). Additionally, Watson defines health as, "unity and harmony within the mind, body, and soul. Health is also associated with the degree of congruence between the self as perceived and the self as experienced" (McEwen & Wills, 2007, p. 45).

These nursing theories all contain variations of a concept of being whole or the process of becoming whole. The idea of being whole or having wholeness is frequently a theme in nursing theoretical definitions of health. If the concept of wholeness becomes the focus of nursing, the role of the nurse scientist is changed from an empirical view of what can be observed to a more holistic view focusing on the idea of a person having a unique lived experience and unique human response (Gaut, 1993). For nursing to practice more holistically, a consistent understanding of the concept of wholeness is necessary.

Four defining attributes of the concept of wholeness have been identified in the literature. The first defining attribute for wholeness identified in the literature is the idea of a human being as a person who is greater than the sum of their parts (Brouse, 1992; Cowling, 2000; Cowling & Swartout, 2011; Little, 1992; Lockheed, 1986; Polakoff & Gregory, 2002; Williams, 1988). This aligns with the organismic worldview identified by nursing theorists mentioned earlier (Brouse, 1992). In order to treat an illness, healthcare providers cannot separate out the illness or dysfunction in the same way that the person cannot dissociate from their illness or dysfunction (Zust, 2006). Nurses cannot compartmentalize people into physical, psychological, or spiritual subsets but must consider all of these simultaneously.

The second defining attribute is that wholeness is the inherent nature of personhood, not an ideal to be achieved by a person (Cowling & Swartout, 2011; Newman, 1997). Inherent wholeness is not only applicable to individuals, but also families, communities, and cultures (Cowling & Swartout, 2011). In the maternal-newborn population, wholeness requires the consideration of the maternal-newborn dyad as an integrated, whole unit. Instead of *seeking* to find wholeness, nurses and other healthcare providers should work to *appreciate* wholeness of individuals or dyads in the maternal newborn population.

The third defining attribute is that wholeness is relational (Borge & Fagermoen, 2008; Burkhardt, 1985; Cowling & Swartout, 2011; Newman, 1997; Polakoff & Gregory, 2002; Widang & Fridlund, 2003; Williams, 1988; Zust, 2006). Just as we cannot separate out the mind and body, we cannot separate a person from their environment (Zust, 2006). Individuals are in constant relationship to their environment, which is a living and ever-

changing system (Borge & Fagermoen, 2008; Cowling & Swartout, 2011; Leach, 2006; McElligott, 2010; Milstein, 2008; Polakoff & Gregory, 2002; Williams, 1988).

Additionally, individuals are in relationship to others within and outside the healthcare system, as well as their social supports (Borge & Fagermoen, 2008; Burkhardt, 1985; Newman, 1997; Widang & Fridlund, 2003; Zust, 2006).

A final defining attribute identified for wholeness is personal autonomy (Borge & Fagermoen, 2008; Burkhardt, 1985; Leach, 2006; Locheed, 1986; Polakoff & Gregory, 2002; Struthers et al., 2008; Swift, 1994; Widang & Fridlund, 2003). An individual/dyad must have autonomy for their health and must be an active participant in the decision-making process. The role of the nurse is to help facilitate the active decision-making on the part of the person(s) by empowering them and supporting their efforts to be autonomous agents in their health (Borge & Fagermoen, 2008).

### **Concept of Wholeness in the Context of the Maternal-Infant Dyad**

Wholeness supports the view that all aspects of an individual are united. These aspects include, but are not limited to, physiologic, social, psychologic, existential, external connections, and environmental conditions, with the understanding that the individual is irreducible and greater than the sum of all these parts. Historically, wholeness has only been used to describe individuals. Because care of mother and fetus or care of mother and neonate is so inextricably linked, we must examine wholeness of the maternal-infant dyad.

For purposes of this work, a new definition of wholeness is proposed for the maternal-newborn population. For the maternal-newborn population, from pregnancy through postpartum, wholeness requires that we view the dyad as our unit of focus

instead of a separate mother and separate newborn. The mother cannot be considered without the newborn and the newborn cannot be considered without the mother. The movement, time, and space of a pregnant woman, and later a new mother and newborn are defined by their new relationship with one another (Newman, 1997). The mother has new responsibilities to the newborn and the newborn has needs that are met through the dependence on the mother. Additionally, the defining attribute of relationship focuses on external relationships that the mother and infant have with other social connections. The mother in the dyad must be supported to exhibit autonomy and make their own choices regarding what is best for the dyad.

The strong relationship between the prenatal period and the foundation of health in the fetus has been identified in research literature (Kluny & Dillard, 2014). An association between the fetal environment and later adult cardiovascular, neuroendocrine, and metabolic disease has been identified. An example of this is the link between prenatal diagnosis of preeclampsia and intrauterine growth restriction (Srinivas et al., 2009). This relationship underscores the importance of utilizing the new definition of wholeness for a dyad even as early as the prenatal period.

Finally, by utilizing the new definition of wholeness for the maternal newborn dyad, emphasis is placed on the fact that the dyad is more than the sum of their parts. The dyad is more than just the physical wellness of the mother and of the baby added together. Dyadic wholeness encompasses aspects of mind, body, spirit, and the environment, but they need to be seen in totality, not broken up into each separate piece as seen in the mechanistic worldview where the “sum of discrete parts and the whole can be predicted from knowledge of the parts” (Brouse, 1992, p. 326).



An increased awareness or appreciation of wholeness by either the person or a care provider can have the consequences of health and the potential for growth. Care providers that appreciate the wholeness of the maternal-infant dyad will naturally focus their interventions on supporting the ability of the dyad to heal themselves (Little, 1992). Newman (2006) has theorized that health is a process of expanding consciousness. Nurses, through forming the partnership with the patient, can co-participate in the process of the expanding consciousness. Wholeness allows for truer discovery on oneself (Burkhardt, 1985). This view of wholeness of the dyad aligns with the philosophical tradition of pragmatism and the constructivist view.

### **Theoretical Frameworks**

Several theoretical frameworks were reviewed for the study to identify what is and is not salient to guide practice in caring for maternal-infant dyads affected by OUD. While each of these frameworks provide a pathway to understanding how we came to our current practice of caring for these dyads; none was deemed sufficient. This section will provide a survey of existing theory; and will conclude with a discussion of theoretical gaps, revealing the need for a new theory to explain the processes women with OUD use to manage the needs of the dyad during pregnancy and the early postpartum period. The created theory can inform future work to guide nursing care for maternal-infant dyads impacted by OUD.

### **Maternal Role Attainment/Becoming a Mother**

Rubin (1967) examined the process a woman goes through in attaining the role of mother after childbirth, through field study work. Maternal role attainment theory identified three stages to becoming a mother; the taking-on process, taking-in, and

letting-go (Rubin, 1967). Through mimicry and role play (later re-named as replication) a woman takes on the role of mother and the behaviors associated with the status of being a mother are expressed by the pregnant individual (Rubin, 1967; Rubin, 1984). Through fantasy work and introjection-projection-rejection (later re-named dedifferentiation), the pregnant individual moves from repeating behaviors seen to examining what the behaviors will look like specifically for themselves and how they fit in with the behaviors being expressed by other pregnant individuals around them (Rubin, 1967; Rubin, 1984). The final stage of becoming a mother is represented as grief work during the letting-go phase (Rubin, 1967). This is the internal reflection and separation of the former self (Rubin, 1967). Additionally, Rubin identified maternal tasks to be accomplished during pregnancy including: (1) ensuring a safe birth for both the mother and baby, (2) seeking support, (3) “binding-in” to the infant, and (4) giving of oneself (Rubin, 1984).

Mercer extended the work of Rubin and she has supported the replacement of the term “maternal role attainment” with the term “becoming a mother” while advocating for a lifespan view of the mothering role (Mercer, 2004). The term becoming a mother captures the sense that there is an expansion of the self in the new role of mother (Mercer, 2004). The achievement of the new maternal identity occurs around 4 months after birth of the infant and situational and personal factors, such as, stress, amount and type of support, birth experience, impact the attainment of the role (Mercer, 1986, 2004). Few studies have examined the relationship between maternal substance use and maternal role attainment.

Both Rubin and Mercer recognized that the process of becoming a mother is individualized and is influenced by both maternal and infant factors (Husmillo, 2013).

Rubin recognizes that the behaviors and actions acquired during role attainment are learned through social interaction and are culturally determined (Rubin, 1967). This recognition of the role that society and culture play aligns with the constructivist philosophy and symbolic interactionism. During the role attainment process in the postpartum period, mothers frequently referenced nurses as models of childcare, highlighting the importance of the role of the nurse in the early postpartum period and their significance in maternal role development of the mother (Rubin, 1967). A gap that is not addressed in these theories is the stigma that mothers may experience when culture and/or society do not agree with aspects of their role performance, such as in the case of opioid use during pregnancy. Additionally, it stands to reason that if nurses display stigmatizing behaviors during any aspect of perinatal care, women's ability to look to those same nurses as role models of infant care will be altered or compromised. Due to societal and healthcare stigma associated with maternal OUD, these theories are insufficient to describe the processes mothers impacted by OUD use to develop a maternal-infant dyad identity.

### **Attachment Theory**

Prior to the 1950s, the purpose for attachment was thought to be two-fold, with a primary and secondary motive being met (Bowlby, 1978). The primary motive was survival related and in the event of an infant, this survival need was for food so an infant formed an attachment to a mother figure for the sake of food (Bowlby, 1978). The relationship with the maternal figure was then viewed as the secondary motivation for attachments to form to ensure prolonged access to food. During the 1950s, researchers began challenging this prevailing view of attachment and attachment behavior became

viewed as any behavior that resulted in closeness to a specific person, who typically is considered to be more capable physically or mentally (Bowlby, 1978, 1982).

Bowlby identified seven features of attachment (1) specificity, a clear preference for an individual; (2) duration, during majority of life; (3) engagement of emotion; (4) begins in the first nine months of life; (5) learning to distinguish between the strange and familiar occurs; (6) is mediated by responses, such as activating and terminating responses; and (7) has biological or survival function (Bowlby, 1978). The change in understanding of attachment was based on a new view that attachment was not just a mechanism for survival, but that attachment minimized fear of potential risks (Bowlby, 1978). Bowlby's attachment theory highlights the importance of a strong attachment base in early childhood to minimize later lifelong problems with relationships (Bowlby, 1978). According to Bowlby's attachment theory, lack of a strong attachment base to a primary caregiver in early childhood can lead to a less than optimal attachment styles in adulthood (Bowlby, 1982). When an individual is not in close proximity to their attachment figure, or a fear of separation is present, then it can signal to the individual an increase of risk (Bowlby, 1982). Bowlby collaborated with Robertson in the early 1950s and described the separation anxiety that young children experience when temporary separation from their primary caregiver occurs (Bowlby, 1982).

A Strange Situation procedure was developed by Ainsworth in order to measure individual differences in infants presented with a novel situation based on the strength and quality of the maternal-infant attachment (Ainsworth et al., 1969). This procedure furthered Bowlby's initial work on attachment and emphasized the importance of maternal attachment to a concept of attachment-exploration balance. Infants that

participated in the Strange Situation procedure varied in their willingness to explore in a new situation. The differences between infants willing to explore and those not willing related to the way in which the infant utilized the mother as a secure attachment figure.

Bell and Ainsworth (1972) further contributed to the concept of attachment by examining maternal responsiveness and the importance of responding to an infant cry. From an evolutionary perspective, similar to Bowlby, Bell and Ainsworth argue that infants are programmed to cry as a signal to promote contact and proximity by the mother (Bell & Ainsworth, 1972). The crying pattern changes over the first year of life indicating that the mother-infant dyad develops an interactional relationship where the more responsive a mother is the more likely the infant is to develop additional modes of communication throughout the first year of life (Bell & Ainsworth, 1972). Attachment theory supports the need for dyadic care with mothers and infants impacted by maternal OUD because the already vulnerable pair must work to overcome unique barriers to attachment, such as managing NAS symptoms and impaired maternal responsiveness.

### **Family Centered Maternity Care**

Kennell and Klaus applied the concept of a sensitive period to the early postpartum care of the mother-infant dyad and were instrumental in leading the transition to a focus on minimizing interruptions in close contact between mothers and their infants in the early postpartum period (Kennell et al., 1974; Kennell & Klaus, 1984, 1998). The focus of Kennell and Klaus' work was on the impact of poor bonding by the mother and interventions to improve bonding of the mother, thereby improving attachment of the infant (Klaus & Kennell, 1976). Kennell and Klaus recognize that multiple factors impact attachment and bonding and that a mother's feelings of love is not an immediate

experience after the birth of the infant, however the first hour after birth is invaluable for the bonding process (Kennell & Klaus, 1998).

As many births occur in the hospital setting, Kennell and Klaus hypothesized that the alterable factors that impact attachment and bonding are the behaviors of the healthcare providers, the first few days of life in regard to amount of separation from mother, and the practices of the hospital (Klaus & Kennell, 1976). Their recommendations for hospitals included (1) providing skin-to-skin contact immediately after birth, (2) closing central nurseries and instead having infants room in with the mothers, (3) maintaining a focus on early and continuous mother infant contact (Kennell & Klaus, 1998).

The early work on attachment and bonding has not been without critique. The work on attachment and bonding has been criticized for methodological issues mainly focused on lack of controlling for confounding variables (Lamb, 1982). Crouch and Manderson (1995) argue that the idea of the sensitive period proposed by Kennell and Klaus did not take into consideration that attachment and bonding are lifelong processes, while Bowlby did not put a timeframe on when attachment must occur. They further argue that since we do not fully understand all of the long-term implications of attachment and bonding, that it should not be implied that attachment and bonding are not possible if early initial attachment and bonding cannot occur (Crouch & Manderson, 1995). Kennell and Klaus did later clarify that the concept of the sensitive period is different than a critical period and that if close mother-infant contact is delayed that it does not ensure that strong attachment and bonding are never possible (Kennell & Klaus, 1984). Clarification of

bonding and attachment are necessary in order to ensure future studies are assessing, measuring, and evaluating the same concept.

Often, the terms attachment and bonding are used interchangeably, however, they are distinct concepts (Hill & Flanagan, 2020). Attachment is defined as the connection that a baby has to the mother (Hill & Flanagan, 2020). Bonding is the connection that a mother has to her baby (Hill & Flanagan, 2020). Dyadic interactions or dyadic behaviors include behaviors where mother is seeking proximity to her infant, contact, touch, and vocalizations to the infant (Daigle et al., 2019). Maternal sensitivity or responsiveness is defined as the expression of maternal behaviors that promote maternal-infant attachment (Daigle et al., 2019). Further, maternal synchrony is important in dyadic interactions and is defined as the coordination of maternal behaviors to match infant behaviors (Atzil et al., 2011). The opposite end of synchrony could be considered maternal intrusiveness, which is excessive maternal expressions of behavior or continued engagement after infant demonstrates signs of distress. A model of nursing care that meets the needs of the maternal-infant dyad would foster both bonding and attachment.

### **Levine's Conservation Model**

A final model that has impacted the understanding of the current state of maternity care, substance use disorders, and the intersection of substance use disorders during pregnancy is Levine's Conservation Model. Levine's Conservation Model is a theoretical framework that can be used to partially inform the processes that may support addiction management and the maternal transition of the mother-infant dyad impacted by substance use disorder. Levine's conservation model of nursing focuses on an individual's ability to maintain wholeness in response to challenges they face from their

environment (George, 2011). Wholeness is the “keeping together” of the entire person (George, 2011). The ability to conserve integrity is the main focus of the theory. Adaptation is seen as the process that is used for conservation, with the purpose for conservation being wholeness or integrity.

Based on Levine’s model, an individual is in constant interaction with the environment and is confronted with challenges. Environmental challenges impact an individual’s balance of energy, their structural integrity, personal integrity, and social integrity (Mefford, 2004). Levine has four principles of conservation that impact an individual’s adaptation towards wholeness. The four principles of conservation are: (1) the conservation of energy of the individual, (2) conservation of the structural integrity of the individual, (3) conservation of the personal integrity of the individual, and (4) conservation of the social integrity of the individual (George, 2011). Through adaptation or conservation within each of the four principles (balance of energy, structural integrity, personal integrity, and social integrity) an individual resolves those challenges.

The nurse’s role as a caregiver is to bring their own skill, knowledge, and compassion to the environment with the patient and facilitate adaptation. Levine’s conservation model of nursing has been utilized in populations such as infants in a neonatal intensive care unit and in a variety of adult populations (Delmore, 2006; Leach, 2006; Mefford, 2004; Mellien, 2001; Newport, 1984; Schaefer & Potylycki, 1993). Examples of the theory’s use within the population of infants include, providing a thermal regulation intervention by skin-to-skin contact, positional impacts on heart rate, blood pressure and sleep state (Mefford, 2004; Mellien, 2001; Newport, 1984).



Within the infant population, the model explores the need for conservation in the face of many environmental factors in the extra uterine environment that were not present in the intrauterine environment (Mefford, 2004). Levine's Conservation Model has also been used in the adult population in a variety of ways, such as wound management, congestive heart failure, and long-term ventilator patients (Delmore, 2006; Leach, 2006; Schaefer & Potylycki, 1993). Additionally, Levine's Conservation Model has been utilized when examining individual responses to environmental challenges. While multiple populations have been examined utilizing this framework, the concept of applying Levine's Conservation Model to a Dyad is unique.

Levine's Conservation Model extends to the population of mother infant dyads impacted by opioid use disorder based on some of the assumptions within Levine's model. According to the model, individuals must be understood within their context of place and time in their environment (George, 2011). They cannot be isolated from their environment. Individuals define health for themselves and work with nurses to find adaptations that best fit with the environment and are most conserving with the goal of health. Without gaining a better understanding of the dyad's environment, challenges, strengths, and definitions of health, nursing will not be able to have a meaningful impact on outcomes for these dyads. Instead of viewing the mother or the infant as separate beings within the model, the mother and infant should be viewed as a dyad and all nursing interventions should be aimed at conservation within the dyad. To explore how conservation within the dyad occurs it is necessary to understand the processes that women utilize to manage the needs of the dyad.

Assumptions of Levine's conservation model when extended to the mother-baby dyad support the use of this model as a framework for dyadic care. One factor is that mother- infant dyads are in constant interaction with their environment; indeed, the mother is the environment for the fetus during the pregnancy, and the mother has a great influence over the newborn's environment after birth when mother and neonate are able to be in close proximity to one another.

Maternal opioid use disorder creates unique challenges that the dyad must confront and resolve during the early postpartum period. These challenges from opioid use can cause (1) a threat to balance of energy of the dyad, (2) a threat to structural integrity of the dyad, (3) a threat to personal integrity of the dyad, and (4) a threat to social integrity of the dyad. Additionally, the dyad cannot be understood outside the context of the place and time in which they are functioning or separated from the influence of everything that is happening around them. Dyads will define health for themselves.

Applying Levine's principles, nursing interventions should be aimed at promotion of wholeness through (1) conservation of energy, (2) conservation of structural integrity, (3) conservation of personal integrity, and (4) conservation of social integrity (George, 2011). Adaptations seek to find the best fit with the environment while conserving the most. The purpose of conservation is health or integrity; the wholeness of the dyad. Finally, the outcomes of nursing care are directed at wholeness of the mother and infant dyad, as reflected by physiologic stability of the dyad, minimal structural injury to the dyad, a strong attachment and bond between the mother and infant, and a functioning family and support system.

While grounded theory does not build from or test a theory, Levine's focus on wholeness and its utility in the maternal-infant population provides background for the development of a context specific theory for dyadic care (Munhall, 2007). In the context of the maternal-infant population, achieving wholeness requires that we view the dyad as our unit of focus instead of an individual mother and individual newborn. The principle of personal integrity for the maternal-infant dyad can be described as a strong bond of the mother to the infant leading to a strong attachment of the infant to the mother. Registered nurses have been identified as role models during the early postpartum period for new mothers (Rubin, 1967) and they are the health care provider with the greatest presence at the bedside. Theory driven nursing interventions to promote mother-infant dyadic care for pairs impacted by maternal OUD are needed. First, it is necessary to understand the current processes used by mothers with OUD to manage the needs of their dyad.

### **Substance Use and Addiction**

The way that substance use and misuse is perceived by society-- including family, the health care team, and even by the government--can have significant implications for how individuals with substance use or misuse are treated (Van Wormer, 2018). Certain commonly held perspectives, such as perceiving addiction as a moral failing or a personal choice, can lead to a more punitive response to addiction despite evidence that addiction has a physiological component (Van Wormer, 2018). The Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR) defines addiction on a continuum, with life-threatening dependence on one end, misuse of substances in the middle, and use without problems on the other end (Van Wormer, 2018).

Opioid use disorder is one type of addiction (Rizk et al., 2019). According to the American Society of Addiction Medicine (2019), addiction is defined as a:

A treatable, chronic medical disease involving complex interactions among brain circuits, genetics, the environment, and an individual's life experiences. People with addiction use substances or engage in behaviors that become compulsive and often continue despite harmful consequences. Prevention efforts and treatment approaches for addiction are generally as successful as those for other chronic diseases. (pp. 2).

Addiction is a lifelong illness where cycles of relapse and remission are common.

McLellan et al. (2000) conducted a literature review comparing drug dependence (including over the counter, prescription, and illegal drugs) to chronic illnesses such as hypertension and diabetes. This review confirmed the role that genetics play in drug dependence, and further identified literature supporting neurochemical changes in the brain after use of these substances. These two findings create a strong argument for the view of substance misuse as a heritable chronic illness (McLellan et al., 2000).

Additionally, epigenetic variations have been linked to opioid use in adults and neonatal abstinence syndrome severity in infants (Sanlorenzo et al., 2018; Wachman et al., 2018).

Because of the genetic and neurochemical basis of addiction, as well as the social and psychosocial impact that addiction has on individuals and their families, use of a chronic disease management model could be effective (Saitz et al., 2008). Similar to other chronic illnesses, the goal of addiction treatment or recovery is self-management (DuPont et al., 2015; Saitz et al., 2008).

## **Substance Use Recovery**

The Substance Abuse and Mental Health Services Administration (SAMHSA), a branch of the U.S. Department of Health and Human Services, defines recovery from substance use disorders as a “process of change through which individuals improve their health and wellness, live a self-directed life, and strive to reach their full potential” (SAMHSA, 2012, p. 3). This view of recovery aligns with the American Society of Addiction Medicine’s definition of addiction, with its focus on recovery as a process, which can involve periods of growth and periods of setbacks (American Society of Addiction Medicine [ASAM], 2011; SAMHSA, 2012). Recovery is individualized and supported by an individual’s health, living environment, purpose in life, and their social support (SAMHSA, 2012). Ten principles to guide recovery were set forth by SAMHSA, including an emphasis on hope, person driven, allowing for many pathways, being holistic, community of support, relationships and social networks, culturally sensitive, trauma informed, focused on strengths and responsibilities of the individual as well as support networks, and provided in a respectful way (SAMHSA, 2012). Definitions of recovery do not include a defined start and end to recovery rather, they emphasize that recovery is a process. The individual defines what the process looks like for themselves; they are the key agent in the process. The SAMHSA principles to guide recovery closely align with the defining attributes of wholeness.

## **Substance Use Disorder in Pregnancy**

Sex and gender differences exist in substance use disorder (SUD) and unique challenges are present when pregnant women experience SUD. In a recent review by McHugh et al. (2018), the subjective sensations of drug use may be influenced by ovarian

hormone variations. Use of heroin in both genders has increased from 2002-2013, however the rate of increase has been more significant in women than men with a 100% increase in women and 50% increase in men (McHugh et al., 2018). Women tend to initiate substance use later in life than men do, and women progress to problematic substance use more quickly from the time of initiation compared to men (McHugh et al., 2018). Social and environmental factors exist which further differentiate the gender-based experience. Women have reported a greater sense of stigma, lack of family support, or childcare responsibilities as barriers to seeking treatment (McHugh et al., 2018). Gender specific recovery programs have improved treatment outcomes by addressing issues salient to women, such as prior trauma, co-occurring psychiatric disorders, and relationship issues-- such as domestic violence or relationship problems with children (Martin et al., 2019; McHugh et al., 2018). Tailoring treatment to these specific gender and sex differences aligns with SAMHSA's principles of recovery.

While substance use rates in pregnancy are lower than in the non-pregnant population, pregnant women do use addicting substances. The National Survey on Drug Use and Health reported in 2016 and 2017, an estimated 6.3% and 8.5% (respectively) of pregnant women used illicit drugs in the past month with marijuana being the most frequently used (4.9% and 7.1%) (Center for Behavioral Health Statistics and Quality, 2018). Heroin and prescription pain relievers, two types of opioids, are included within the category of illicit drugs. Opioid use disorder is a subset of the larger substance use disorder category (Rizk et al., 2019).

The perinatal period is considered a "window of opportunity" for behavior change (Daley et al., 1998, p. 240; Kendler et al., 2017). A proposed reason for this increased

motivation for behavior change is a desire to protect the fetus (Kendler et al., 2017).

Martin et al. (2019) describe pregnancy as a time when the addiction life course intersects with the reproductive health life course presenting this opportunity to help change the trajectory of either life course during pregnancy or in the postpartum period.

When controlling for known confounding variables, such as sociodemographic variables, depressive symptoms during pregnancy, family history of substance abuse, and prenatal history factors, a more positive self-concept as a maternal provider increased cessation of substance use during pregnancy and was associated with earlier initiation of prenatal care (Massey et al., 2012). Due to the many known variables that increase a woman's risk of substance use disorder, and the recognition that pregnancy is a time of increased motivation for behavioral change, it is vital that all providers who encounter pregnant patients with substance use disorder recognize and act on the wide range of needs those patients might have (Knoph, 2016). To improve healthcare provider's ability to support women with OUD during and after pregnancy, it is important to know the processes that women use to manage the needs of the dyad including processes specific to building a self-concept as a maternal provider.

### **Opioid Use Disorder in Pregnancy**

A subset of substance use disorder is opioid use disorder (OUD) (Rizk et al., 2019). Opioid addiction, which includes the use of one or a combination of heroin, prescription pain relievers, and synthetic opioids, has become a national crisis (National Institute on Drug Abuse, 2019). It is important to focus on opioid use in pregnancy because of the impact it has on both maternal and infant outcomes (Reising et al., 2019). Rising rates of illicit drug use were mentioned earlier; more specifically, rates of opioid

use during pregnancy have risen as well (National Institute on Drug Abuse, 2019). Rates of opioid use disorder (OUD) at the time of delivery quadrupled during the years 1999-2014 (Centers for Disease Control and Prevention [CDC], 2018a). The National Survey on Drug Use and Health reported in 2016 and 2017, an estimated 1.2% and 1.4% (respectively) of pregnant women used opioids (including heroine or other prescription opioid) in the past month (Center for Behavioral Health Statistics and Quality, 2018). Of those pregnant women reporting the trimester they were in at the time of the survey in 2017, the rate of opioid use within the last month did not differ based on the trimester reported (Center for Behavioral Health Statistics and Quality, 2018).

In the United States, the leading cause of death in reproductive aged women is drug-induced deaths (Smid et al., 2019). The pregnancy-associated mortality rate involving opioids tripled from 1.33 to 4.2 between 2007 and 2016 in a study conducted within 22 states including the District of Columbia (Gemmill et al., 2019). In the same study 70% of all of the pregnancy associated deaths involving opioids in 2016 occurred during pregnancy or during the 42 days after the delivery of the infant. The rising trends of opioid use, morbidity, and mortality in pregnancy and the postpartum period are concerning.

While maternal mortality is the most serious outcome from OUD, opioid use in pregnancy has a range of negative short-term and life-long consequences for both mother and newborn (Mirick & Steenrod, 2016). Short-term complications include inadequate levels of prenatal care, having an increased risk of fetal growth restriction, abruptio placentae, preterm labor, and neonatal abstinence syndrome (ACOG, 2017; Rizk et al.,



2019). Intrauterine fetal opioid exposure has been associated with increased risk of heart defects, neural tube defects, and gastrointestinal defects (Rizk et al., 2019).

Due to the increase in opioid use disorder in pregnancy, an increase in neonatal abstinence syndrome has occurred as well, with an increase from 2.8 per 1000 to 14.4 among Medicaid insured births since 1999 --a nearly fivefold increase (Kroelinger et al., 2019; Whalen et al., 2019; Winkelman et al., 2018). NAS can occur in a newborn after continued exposure to opioids in utero followed by a sudden stop of passive exposure at the time of birth, regardless of type of opioid (Lisonkova, 2019; Whalen et al., 2019). Due to opioid receptors being concentrated in the central nervous system and the gastrointestinal tract, newborns with NAS display behaviors such as high-pitched crying, tremors, irritability, increased muscle tone, seizures, uncoordinated suck, diarrhea, poor weight gain, diaphoresis, mottling, and temperature instability (Hudak & Tan, 2012).

Winkelman et al. (2018) conducted a serial cross-sectional analysis on National Inpatient Sample data from Agency for Healthcare Research and Quality (AHRQ) during 2004-2014. Findings from this large, nationally representative sample demonstrate that neonates with NAS have longer hospital stays than newborns not exposed to opioids, with the average length of stay between 14.6 to 16.5 days, depending on severity of NAS symptoms (Winkelman et al., 2018). Additionally, infants with NAS are more likely to require high levels of care, such as Special Care Nurseries or Neonatal Intensive Care Units, and are at greater risk for readmission to the hospital than infants that do not experience NAS (Sanlorenzo et al., 2018; Winkelman et al., 2018).

### **Current Recommendations for Mothers and Infants Impacted by OUD**

The significant impact that opioid use in pregnancy has on both the mother and the infant must be considered in the care that is provided to the dyad throughout pregnancy and in the postpartum period. The majority of the current research literature focuses on assessing, treating, or preventing NAS with few mentions of other maternal or fetal complications or outcomes (Rausgaard et al., 2019). The current focus of research and practice does not recognize that the well-being of a mother is strongly connected to the wellbeing of the child (Bloomfield & Rising, 2013). Our current understanding of SUD treatment and recovery stresses individualized and person driven processes. As current treatment practices for both the mother and the infant are reviewed, it is vital to consider ways in which the relationship of the mother-infant dyad is impacted by the current practice. Treatment of opioid use disorder in pregnancy benefits the mother as well as the infant by decreasing the risk of maternal overdose and increasing likelihood that the mother will discontinue use of illegal opioids (ACOG, 2017; Premkumar et al., 2019; Schiff et al., 2018).

### **Harm Reduction Model**

The Harm Reduction Model, which has its roots in Europe in the early 1970s, aligns with principles of public health and is becoming a prominent model in the field of addictive behaviors (Marlatt, 1996). The Harm Reduction Model revolutionized the way individuals viewed addiction and other issues, such as treatment of human immunodeficiency virus (HIV) (Marlatt, 1996). Instead of viewing addiction as a moral issue, as was done in the “War on Drugs”, or as a disease that requires treatment (where abstinence is the goal), the harm reduction model is viewed as a pragmatic and

compassionate way to minimize harm and harmful consequences of addictive behaviors (Marlatt, 1996). This model has encouraged a shift from focusing on absolute reduction of use of addictive substances to a reduction of harm from the use of those substances (Marlatt, 1996).

An example of a harm reduction program is needle exchange programs that were started to minimize transmission of HIV and hepatitis B due to sharing needles by intravenous drug users (Marlatt, 1996). Examples of harm reduction strategies for legal drugs, such as tobacco, include use of nicotine patches or gum (Marlatt, 1996). While the harm reduction model recognizes that complete abstinence would be an ideal situation, it is not always possible so small, attainable steps to reduce harm are more effective (Marlatt, 1996). Harm reduction has emerged in many areas due to groups of illegal drug users advocating for the needs of their own community (Marlatt, 1996).

In 1995, a drug policy working group proposed recommendations urging the Office of National Drug Control Policy to adopt a two-pronged approach to substance abuse policy (Reuter & Caulkins, 1995). The two prongs included both harm reduction and use reduction, reporting that previous policies had only focused on use reduction and have not been effective (Reuter & Caulkins, 1995). By 2000, approximately 150 needle exchange programs had been set up in order to decrease the rate of HIV/AIDS and hepatitis C virus contraction through exposure by contaminated syringes by injection-drug users (Center for Disease Control and Prevention [CDC], 2005).

Maternal substance use in pregnancy is one of the health issues where the harm reduction approach has been embraced. Harm reduction is the approach endorsed by the American College of Obstetrics and Gynecology, the Society of Maternal-Fetal

Medicine, and the American Society of Addiction Medicine to treat pregnant women with opioid use disorder (ACOG, 2017). Medication assisted treatment with opioid pharmacotherapy helps to stabilize maternal levels of opioids, reduce the risk of using illicit drugs, and decrease behaviors that could increase exposure to viruses, such as human immunodeficiency virus and hepatitis C virus (Krans, Kim, et al., 2019). MAT use further reduces harm to this population because enrollment in a MAT program is associated with increased participation in prenatal appointments and decreased rate of relapse (ACOG, 2017). Relapse during pregnancy could expose the mother and fetus to transmission of communicable diseases through high-risk sexual or drug behaviors, accidental overdose, and obstetric complications (ACOG, 2017).

### **Medication-Assisted Treatment**

The two main options for opioid use disorder during pregnancy include 1) medically supervised withdrawal from opioids or 2) maintenance with long-acting opioid agonist pharmacotherapy (e.g. methadone, buprenorphine, or buprenorphine-naloxone (ACOG, 2017; Klaman et al., 2017; Rizk et al., 2019). Medically supervised withdrawal consists of discontinuation of opioid use and management of symptoms (ACOG, 2017). A high rate of relapse is seen with individuals who undergo medically supervised withdrawal; additionally, unpredictable levels of opioids can occur in the mother during cycles of abstinence and relapse (ACOG, 2017; Rausgaard et al., 2019). For these reasons, medically supervised withdrawal is not the recommended practice for pregnant women (ACOG, 2017; Premkumar et al., 2019).

Treatment with a long-acting opioid agonist is known as medication-assisted treatment (MAT) and is the current recommended management of opioid use disorder

during pregnancy (ACOG, 2017; Klamman et al., 2017; Rizk et al., 2019). Medication-assisted treatment (MAT) should be combined with behavioral therapy to address any cooccurring mental health needs such as depression or anxiety, or prior histories of trauma, which are common comorbidities with substance use (Martin et al., 2019; Reising et al., 2019). There is an increased incidence of NAS in newborns with exposure to methadone in utero compared to exposure to buprenorphine; however, both medications are considered appropriate for MAT in pregnancy, and selection of an agent is based on prescribing preferences and patient needs (Klamman et al., 2017; Lemon et al., 2018).

The early postpartum period is a time of increased risk for maternal discontinuation of MAT (Wilder et al., 2015). Studies report that increased doses and early initiation with MAT during pregnancy can make it more likely that a woman will continue with MAT after delivery (Jansson et al., 2019; Klamman et al., 2017; Reising et al., 2019; Wilder et al., 2015). Limited literature on interventions to improve continuation in MAT during the postpartum period has been published (Wilder et al., 2015).

### **Neonatal Abstinence Syndrome**

The goals of treatment for Neonatal Abstinence Syndrome (NAS) are to promote normal growth and development while minimizing negative outcomes of exposure to opioids in utero using both non-pharmacologic and pharmacologic interventions (McQueen & Murphy-Oikonen, 2016). The American Academy of Pediatrics supports a nonpharmacologic approach to treatment as the first step for therapy (Hudak & Tan, 2012). Supportive care for the neonate with NAS involves minimizing stimulation by promoting a calm, quiet environment (McQueen & Murphy-Oikonen, 2016). Specific

guidelines to nonpharmacologic interventions, such as parental rooming in, kangaroo care, music and massage therapy, are not available as little evidence has been published on the effectiveness of these nonpharmacologic interventions in this population and more rigorous research needs to be done (McQueen & Murphy-Oikonen, 2016). Neonates that develop NAS symptoms have typically been cared for in a separate unit of the hospital so that they can receive specialty nursing care (Rockefeller et al., 2019).

Pharmacologic therapy is initiated if nonpharmacologic interventions are not effective to control the symptoms of NAS (Kocherlakota, 2014). A substantial body of research has tested the use of pharmacotherapy and the resulting neonatal outcomes; some results support use of opioid antagonist medications compared to morphine while other studies demonstrate that the medication used is not as crucial as having a consistent protocol in place on the impact of short-term outcomes (Whalen et al., 2019). Multiple medications are available for use to control symptoms, however current recommendations suggest morphine is the best first-line therapeutic agent (Osborn et al., 2010).

Several studies have examined the impact of maternal-neonatal contact on the newborn; however, little research has looked at the impact of this increased contact on the mother or the complete maternal-infant dyad. Women with opioid use disorders often display impaired parental responsiveness and bonding with their infants after birth, which can negatively impact the neurodevelopment of infants (Mirick & Steenrod, 2016). The common NAS behaviors, such as irritability, poor feeding, and difficulties with sleeping, further challenge a mother that is impacted by OUD making attachment and bonding a difficult process for this dyad (Klaman et al., 2017; Mirick & Steenrod, 2016).

Interventions that positively impact mom and baby in the immediate postpartum period could have long-term positive effects by enhancing attachment in the early and later postnatal period. Before we can fully understand how interventions aimed at increasing maternal-neonatal contact impact the dyad, an examination of how care is currently provided to the dyad is required.

### **Gaps in the literature**

Each of these models and frameworks have played an integral part in shaping the current state of maternity care, substance use disorders, and the intersection of substance use disorders during pregnancy. The history of how we have come to our current practice, allows for critical appraisal of the current research in the area of opioid use in pregnancy. At the time of this writing, few published qualitative articles have looked at the experience of mothers in self-identified recovery during pregnancy and the early postpartum period. Levine's conservation model aligns well with the concept of wholeness and the SAMHSA definition of recovery and its ten guiding principles. Levine's theory is limited, by its focus on the *outcome* of wholeness and not the *process* in which to achieve wholeness. Little is known about the process by which mothers preserve their integrity to achieve wholeness, and how nursing care could facilitate that process.

### **Specific Aims**

The aim of this study was to develop a situation specific theory of the processes used by women to meet the needs of the maternal infant dyad impacted by OUD during pregnancy and the early postpartum period.

### **Summary**

This chapter presented the philosophical underpinnings, theories, and frameworks that have helped shape our current understanding of mother-infant care and substance use disorder in pregnancy. The methodology for the current study will be presented in the following chapter.



### **Chapter 3: Methodology**

The processes used by mothers with OUD to manage the needs of their maternal-infant dyad during pregnancy and in the early postpartum period were explored. A grounded theory approach was utilized to give voice to participant knowledge and experiences of their processes (Patton, 2002). The methodology to answer the research question discussed in this chapter includes (a) alignment of selected approach with study purpose, (b) selection of participants, (c) instrumentation, (d) data collection, (e) ethical considerations, (f) data analysis, and (g) methodological rigor.

Using Grounded Theory, the following research questions were addressed:

1. In women who are self-managing OUD and medication assisted treatment (MAT), what processes are used to manage their pregnancy and early postpartum period to meet the needs of the mother-infant dyad?
2. What key factors did women perceive to be facilitators and barriers that influenced their efforts to meet the needs of the mother-infant dyad?

#### **Grounded Theory**

Grounded theory is a qualitative research methodology (Rieger, 2019; Singh, 2018; Strauss & Corbin, 1994). Grounded theory methods offer a researcher a systematic guide for the collection and analysis of qualitative data with the aim of generating theory (Charmaz, 2014; Strauss & Corbin, 1994). In alignment with this method, the researcher followed an iterative process, simultaneously engaging in data collection and data analysis (Charmaz, 2014; Strauss & Corbin, 1994). Similar to other qualitative methods of research, grounded theory utilizes multiple data sources, such as observations, interviews, and documents (Strauss & Corbin, 1994). Grounded theorists move beyond

description or reporting of what is being studied to interpreting the data that is collected (Strauss & Corbin, 1994).

Theories that emerge from grounded theory methodology can be either formal or substantive, where formal theory is a more broad or general theory and substantive are more specific to a narrow context or explains a process that may be specific to a certain phenomenon (Glaser, 1967; McCann & Polacsek, 2018). This study aimed to develop a substantive theory of processes used by women to meet the needs of the maternal-infant dyad impacted by OUD during pregnancy and the early postpartum period. The created theory will inform future development of nursing interventions to guide nursing care for mother-infant pairs in order to support mother's efforts of meeting the needs of the dyad.

Over time, grounded theorists have been influenced by historical and intellectual trends and the approaches used by different researchers have evolved (Rieger, 2019; Singh, 2018; Strauss & Corbin, 1994). Strauss and Corbin (1994) described the responsiveness of the methodology as not a change to the central elements of the methodology, but a recognition of changing conditions in which the methodology is used. While classical grounded theory was developed in 1967 by Glaser and Strauss, three different approaches have emerged: Glaser, Strauss and Corbin, and Charmaz (Charmaz, 1990; Glaser, 1967; Singh, 2018; Strauss, 1987; Strauss & Corbin, 1994). Similarities that remain among those approaches include: 1) a focus on utilizing an inductive approach to understanding the process being studied; 2) the use of constant comparison, simultaneous data collection, and theoretical sampling during data collection and analysis; 3) theoretical saturation; 4) the use of memo writing, and 5) the generation of a theory (Singh, 2018).

### **Role of Existing Literature**

The three main approaches to grounded theory vary in their view of the role that existing literature plays in the development of a theory (Birks & Mills, 2015). In classical grounded theory as defined by Glaser, no previous literature review should be conducted prior to the data collection because the theory should be derived solely from the data collected; not from a preconceived idea about the data (Glaser, 1967). In classical grounded theory, a review of the existing literature can occur as the theory is emerging from the data (McCann & Polacsek, 2018). Both Corbin and Strauss and Charmaz identify the usefulness of a preliminary review of existing literature in order to strengthen the researcher's theoretical sensitivity prior to data collection (McCann & Polacsek, 2018). This allows for a researcher to be more aware of the broader context that impacts the participant. All approaches encourage an in-depth review of the existing literature as the theory emerges in order to support the development of the theory by comparing initial codes and findings with previous results (Charmaz, 2000; Glaser, 1967; McCann & Polacsek, 2018; Strauss & Corbin, 1994). A broad review of constructs and theories that impact current understanding of maternity care and care of maternal opioid use was conducted prior to initiating this grounded theory study and was presented in chapter two.

### **Role of the Researcher**

The three main approaches to grounded theory vary in their view of the role of the researcher in data collection, analysis, and theory development (Polacsek et al., 2018). In the classical grounded theory approach by Glaser, the researcher is independent of the research process (Glaser, 1967; Polacsek et al., 2018). As other approaches emerged in grounded theory, the researcher took on a more active role (Charmaz, 1990; Glaser, 1967;

Strauss & Corbin, 1994). Strauss and Corbin recognize that the researcher cannot maintain complete objectivity and therefore should take steps in their study design to minimize any subjectivity or forcing of the data (Charmaz, 1990; Strauss & Corbin, 1994). The constructivist approach affiliates with the philosophical perspective of symbolic interactionism (Charmaz, 2000). Symbolic interactionism assumes that context and an individual's actions are crucial in the forming and expressing of one's interpretations, making the researcher an active participant in the research process and in the cocreation of data (Charmaz, 2014).

### **Alignment with Methodology**

Current theoretical frameworks are inadequate to address the unique needs of the maternal-infant dyad impacted by maternal opioid use disorder. Levine's theory, as presented in chapter two, is limited as its focus is on the *outcome* of wholeness and not the *process* in which to maintain wholeness. Little is known about the process by which mothers impacted by opioid use preserve their integrity to maintain wholeness of the dyad.

Of the three most commonly utilized grounded theory approaches, the constructivist approach developed by Charmaz was the most appropriate approach for this study due to its philosophical assumptions. Because the researcher has practice experience as a labor and delivery registered nurse, Glaser's assertion that the researcher must have little experience with the topic was not possible (Glaser, 1967). The researcher was not able to unlearn content knowledge and personal experiences gained through their professional education and employment or through personal experience with their own transition to the role of being a mother.

As a nurse with a background in caring for women during pregnancy, labor, and postpartum, the PI's familiarity with health care practices increased understanding and interpretation of data collected in interviews. However, the background as a nurse had the potential to create an unintentional barrier to women being interviewed that may come with fears about the assumptions of the researcher. Personal biases of the PI were addressed in multiple ways, including frequent memo writing, debriefing with the dissertation Chair, and consulting with dissertation committee members. The PI also spent time explaining the purpose of the study to participants prior to beginning interviews in order to help minimize fears from the participants.

Additionally, nurses build relationships with patients in order to provide holistic care. This tenet of nursing care means that the PI's nursing experience aligns with Charmaz's view that the researcher is an active participant in data analysis and interpretation (Charmaz, 2000; Singh, 2018). Therapeutic communication skills honed from working as a registered nurse potentially strengthened the relationships formed with participants.

Finally, constructivism recognizes that there may be multiple realities and that understanding context is integral in identifying individual interpretations of reality (Charmaz, 2000). Health care is a rapidly changing field, and the way care is delivered and how women experience recovery in the immediate postpartum period change as health care and society change. Recovery is also very individualized (SAMHSA, 2012). Familiarity with current constraints to healthcare environment also allowed for the PI to move beyond grounded theory into the next steps of changing practice. The researcher's previous experience working as a nurse improved the likelihood that the proposed theory

is meaningful to both mothers and nurses. For these additional reasons, the constructivist approach aligned with the researcher questions.

### **Selection of Participants**

In congruence with Charmaz's approach, participants were identified through purposive criterion and snowball sampling approaches (Munhall, 2007). In the current study, a sample of mothers who self-identify as being in recovery from opioid use were interviewed. Inclusion criteria included:

- 1) English-speaking,
- 2) 18 years of age or older,
- 3) live in the United States,
- 3) within the first year after birth who,
  - 3a) self-identify as in recovery from substance use and
  - 3b) were being treated with medication-assisted treatment during the course of their pregnancy.

Inclusion criteria were based on current definitions of recovery and guidelines for treatment of opioid use disorder in pregnancy (ACOG, 2017; ASAM, 2019; SAMHSA, 2012).

### **Recruitment Strategies**

Grounded theory encourages the gathering of multiple perspectives in data collection. The use of multiple voices to gain an understanding of process aligned with the constructivist approach to grounded theory (Charmaz, 2000). The participants were not constrained by factors such as being first-time mothers or utilization of specific types of treatment.

A variety of recruitment strategies were implemented in phases and took place from July 2020 to July 2021. Initially, a study flyer (see appendix A) was created introducing the study with a URL link and QR code to an anonymous Qualtrics survey and distributed or displayed by local community organizations in a large metropolitan area (Qualtrics, Provo, UT). Individuals were invited to scan the QR code or enter the URL to read about the study and complete the screening questions. Those individuals who met eligibility criteria were asked to provide a pseudonym, an email address, and a phone number.

Due to the COVID-19 pandemic, the next phase of recruitment consisted of utilizing social media. The PI contacted administrators of parenting and recovery Facebook groups asking if they would be willing to share information about the study. Online posts contained the same recruitment flier with the URL and QR code. A Facebook Ad campaign was developed following the protocols identified by Jones et. al. (2017) and Wozney et al. (2019). To support the Facebook Ad campaign, a Facebook pages, M.O.M. (which stood for Mothers on MAT), was created. Ads did not direct individuals to the Facebook study page, rather the ads included a “Learn More” button that took individuals from the Facebook ad directly to the anonymous Qualtrics Survey URL. This step ensured that no individual data was captured through Facebook. Three separate ad campaigns were run. The first campaign from September 29, 2020 to October 4, 2020; October 7, 2020 to October 12, 2020; and November 18, 2020 to December 2, 2020. Additionally, the primary investigator created a Twitter account and using strategic hashtags, tweeted the study flier. Online support groups, NextDoor, and other online

community groups were utilized as additional places the study flier was posted and shared.

The next phase of recruitment utilized Amazon Mechanical Turk (MTurk), an online crowdsourcing platform that has been used in research to recruit and compensate participants for online surveys (Mason & Suri, 2012). The previously described Qualtrics survey was linked to an MTurk task as a way to identify potential participants (Qualtrics, Provo, UT). MTurk workers who lived in the United States and had Parenthood Status as true were provided the opportunity to accept the task. A small trial of 20 tasks were made available.

As local restrictions were decreasing for Covid-19, face-to-face visiting of local Medication Assisted Therapy clinics within a moderately-sized Midwestern city began on November 18<sup>th</sup>, 2020. The PI met with clinic managers or nursing supervisors to discuss the study and ask their willingness to display the flier at the clinic. At this point in the recruitment process, the first potential participants were identified. Following one interview, where a participant identified the name of a social media group that they are a member of the PI emailed the administrator of the group and mentioned the research study and requested a flier be posted in the group. This Facebook group agreed to post the flier in their closed group.

Due to the anonymity of the Qualtrics survey, it is not possible to determine exactly which mode of recruitment identified each of the participants. Based on the timeline of when interested and eligible participants began submitting survey responses, the face-to-face meetings with Medication Assisted Therapy clinics and the one



Facebook group what was willing to share the flier seemed to be the most successful way to recruit this population.

### **Screening for Eligibility**

For each recruitment strategy, potential participants were asked to respond using the URL or QR code embedded within the study flier. The URL or QR code sent potential participants to a two-part Qualtrics survey. The first part provided information about the study, including topic of study, potential time commitment, and eligibility criteria. Only women who met the eligibility criteria and indicated a willingness to participate, were presented the second part asking potential participants to provide a pseudonym, email address, and a phone number where they felt comfortable being contacted. The participant was advised to use an email address without any identifying information. Individuals that did not meet eligibility to participate were presented with a message stating, “Thank you for your interest in this research study. Based on your previous responses, you are not eligible for participation at this time. Thank you for your time.” Participants that met eligibility, were then emailed by the Primary Investigator and an interview was scheduled. A second screening was completed at the beginning of the interview, prior to the consenting process. Individuals no longer meeting eligibility criteria were not interviewed or included in the study. All responses to the Qualtrics survey were maintained in the secure Qualtrics database.

### **Instrumentation**

Following the tenets of Grounded theory required gathering rich data and thick descriptions in order to create a representative theory (Charmaz, 2000). Data collection was not limited to one form of data. Charmaz identified observations, interviews, public

records, books, diaries, journals and a researcher's own reflections as potential sources of data to generate thick descriptions (Charmaz, 2000). The credibility and quality of the study depends on the data collected, with the goal of obtaining in-depth, rich, and relevant data (Charmaz, 2014).

### **Interviews**

Individual, semi-structured intensive interviews were conducted via a secure online conferencing platform operated by the PI's university (Munhall, 2007; Charmaz, 2014). To maintain participant anonymity, cameras were off during the interview process. The interview guide utilized to guide contained general, open-ended questions as well as a potential list of more focused questions to be used as a guide, if needed (Charmaz, 2014). See appendix B for the interview guide. Open-ended questions allowed for flexibility as well as control throughout the interview (Charmaz, 2014). After the first two interviews were completed, the order of questions was rearranged to stay with more general motherhood questions prior to asking about recovery. This allowed for the interviewer to establish more rapport with participants before discussing more sensitive topics, such as history of drug use and recovery. The interview guide was further adjusted as data analysis continued to allow for specific data to be gathered to further refine categories or themes.

### **Field Notes**

The researcher recorded field notes on paper during and following each interview (Munhall, 2007). Notes on information that was not captured in the verbal discussion of the interview such as participant behaviors throughout the interview were recorded and were included as data for constant comparative analysis.

## **Memos**

Memo writing was utilized to keep track of how the researcher's personal history and biases may shape analysis of data at all steps in the data collection and analysis process (Birks & Mills, 2015). Memo writing encouraged the researcher to examine the data and developing categories in new ways (Charmaz, 2000). Through the use of action-focused codes, the researcher focused on processes and relationships instead of siloed concepts (Charmaz, 2000). Memo writing provided a timeline and record of how the PI thought about the data, how categories were refined, and the emerging relationships amongst the categories (Charmaz, 2000). Memos were recorded electronically onto a word document (dated and timed) by the PI throughout all stages of the study.

## **Data Collection**

Data collection and data analysis occurred simultaneously per grounded theory (Charmaz, 2000). The data collection and analysis process began in November 2020 and continued until saturation of major categories had occurred in July 2021. The interviews were audio recorded and auto transcribed via the secure online conferencing platform operated by the PI's university. Transcribed interviews were verified for accuracy by the primary investigator and were uploaded into NVivo v. 12.6 for data analysis (QRS, 2018). Line-by-line coding was performed for interviews after verification of transcripts. Initial codes were identified out of the data shortly after the first few interviews were completed (Patton, 2002). The principal investigator (PI) and mentor used an iterative process of data analysis as additional interviews were conducted.

## **Demographic Data**

Demographic data (Appendix C) was collected from all participants at the end of the interview process and was included in the analysis and interpretation.

## **Qualitative Data**

In-depth interviews were conducted, as they align with grounded theory methodology (Charmaz, 2014). Placing arbitrary time limits on an interview can have a negative impact on the research; participant stories or further examination of a topic can deteriorate (Charmaz, 2014). This type of interview style allowed for open-ended and in-depth examination of the participant experience. The open-ended nature of the interview allowed for the researcher to pursue ideas in the moment (Charmaz, 2014). As the study progressed, interview guide questions evolved.

## **Ethics**

Approval of the study was obtained from the institutional review board at the academic institution at which the PI is affiliated (Appendix D). The study was considered minimal risk and underwent expedited review, based on category 7. Initial assent to participate was collected at the time of the initial screening through the Qualtrics survey. At the time of the interview, all participants had the consent form read aloud to them and verbal informed consent was obtained (Appendix E).

To maintain protection of participant rights, all participants provided a pseudonym for the interview. This pseudonym was utilized throughout transcription and data analysis. Participant contact information was kept separate from interview data. Additionally, a Certificate of Confidentiality from the NIH was obtained (Appendix F). All audio recorded interviews were uploaded and stored to a password protected

computer program. After transcripts were proofread and deidentified, original recordings were deleted from the device. Verbal consent was captured through the transcriptions. Transcriptions were transferred to NVivo on the PI's password protected computer, and backed up onto the University's secure cloud storage, OneDrive. All transcripts and files are labeled by participant ID and will be stored for 5 years after completion of the study.

Participation was optional; participants were notified that they could withdraw from the study at any time without any repercussion and that they did not have to answer any question that they did not wish to answer. Participants were informed of the mandatory reporting requirements of the interviewer through the consenting process.

Participants were provided a \$20 stipend Amazon gift card following participation in the study. This amount of stipend demonstrated to participants that their time was valuable while not being such a large amount that would be seen as coercive.

### **Data Analysis**

Concurrent data collection and analysis began following the first interview. The first step of analysis was initial line-by-line coding (Charmaz, 2000). During initial coding, the researcher read the transcripts line-by-line and defined actions or events in the data (Charmaz, 2000). Line-by-line coding encouraged the researcher to stay immersed in the data without imposing or forcing personal assumptions, keeping the researcher focused on the views expressed by the participants (Charmaz, 2000). The researcher constantly engaged with the data by asking questions of the data to allow for new perspectives that are grounded in the data and its context (Charmaz, 2000). During the initial coding phase, the researcher and team identified active codes (Charmaz, 1990). Line-by-line coding continued until categories emerged.

Beginning with the analysis of the second transcription, the research team engaged in constant comparison (Charmaz, 2000). Constant comparison is the process of comparing data within, across, and between interview transcripts (Charmaz, 2000). This entailed (a) comparing different views, experiences, or actions between two or more participants, (b) comparing across time from the same participant, (c) comparing one situation with another situation, (d) comparing data with the groups of codes (categories), and (e) comparing one category to one or more different categories (Charmaz, 2000). During constant comparison, the researcher continued to ask questions about the data and the early conceptual concepts that were developing (Birks & Mills, 2015).

Intermediate coding, or focused coding, followed as the data collection and analysis continued (Birks & Mills, 2015). During focused coding, grouping of existing codes into categories to explain patterns within the data occurred (Birks & Mills, 2015). Potential sub-categories were identified, and the focus became gaining an interpretation of the dimensions of each category (Birks & Mills, 2015). In this phase, constant comparison methods were again utilized to gain a deeper understanding of developing categories and the relationship amongst categories. In comparison to other grounded theory approaches, such as Strauss and Corbin (1990) with prescribed steps for dimensionalizing and constructing a conditional matrix, the constructivist method allowed for flexibility during the focused coding (Charmaz, 2000; Rieger, 2019). Any strategy or method used in other grounded theory approaches can be utilized for the focused coding stages where there is alignment between the method and data collected (Rieger, 2019).

The categories established for the developing theory were comprised of the initial and focused codes (Charmaz, 2000). From this point, the early tenets of the theory were identified by the researcher (Charmaz, 2000). Strategies such as diagraming, as suggested by Strauss and Corbin (1990), were used to further the understanding of codes.

Researcher memos were maintained for purposes of keeping record of decision making throughout the analysis process, capturing researcher's thoughts of developing categories, and to recognize assumptions throughout the data analysis process (Charmaz, 2014). The process of memo writing ensured participant-grounded interpretation of the empirical data collected (Charmaz, 2000). Interviews continued until theoretical and meaning saturation was reached (Patton, 2002). Meaning saturation occurred when the understanding or interpretation of categories and themes was complete and nuances had been identified (Young & Casey, 2019).

### **Methodologic Rigor**

To provide rigor to the study, strict adherence to the standards set forth by the constructivist grounded theory approach were taken. Following the criteria to evaluate constructivist grounded theory studies, the elements of credibility, originality, resonance, and usefulness are presented (Charmaz, 2014). Credibility was demonstrated through the rich interviews gathered from a diverse sample of mothers. The use of constant comparative methods allowed for a systematic approach to data analysis, and the use of direct quotes support that the categories and themes are grounded in the data. Building in questions to later interviews specific to emerging categories and themes allowed for validation that thematic interpretation of data aligned with participant perspectives. As no theoretical framework currently exists specific to the processes used by mothers who are

self-managing OUD and MAT to meet the needs of the dyad during pregnancy and the postpartum period, this work extends our knowledge on the active role mothers have (Charmaz, 2014). To address the criteria of resonance, the researcher uncovered and explored assumptions to fully explore the phenomenon. Finally, to address the criteria of usefulness, the researcher aimed to create a theory that can inform future patient care of the mother-infant dyads in pregnancy and the early postpartum period. Further discussion of resonance and usefulness are included in the discussion.

### **Summary**

This chapter presented how a constructivist grounded theory approach was used to explore the processes used by mothers with OUD to manage the needs of their maternal-infant dyad during pregnancy and in the early postpartum period. The proposed (a) alignment of selected approach with study purpose, (b) selection of participants, (c) instrumentation, (d) data collection, (e) ethical considerations, (f) data analysis, and (g) methodological rigor was presented in detail.



## **Chapter 4: Results**

The aim of this study was to investigate the processes used by mothers with OUD to manage the needs of their maternal-infant dyad during pregnancy and in the early postpartum period. A grounded theory approach was utilized to give voice to participant knowledge and experiences of their processes (Patton, 2002). The results of the grounded theory study are presented in this chapter and include (a) descriptive statistics, (b) themes related to research question one, and (c) themes related to research question two.

Using Grounded Theory, the following research questions were addressed:

1. In women who are self-managing OUD and medication assisted treatment (MAT), what processes are used to manage their pregnancy and early postpartum period to meet the needs of the mother-infant dyad?
2. What key factors did women perceive to be facilitators and barriers that influenced their efforts to meet the needs of the mother-infant dyad?

### **Research Question One Results**

A detailed description of the themes identified for research question one is found in the manuscript titled, “How Women in Recovery Navigate Pregnancy, Postpartum, and Early Motherhood: A Grounded Theory Study” (see Appendix G). Supplemental information is provided.

### **Additional Participant Characteristics**

Supplemental participant characteristic data is found in Table 1.

**Table 1***Participant Characteristics*

ID	Age (years)	Standard of Living <sup>a</sup>	MAT Type <sub>b</sub>	Employ- ment Status <sup>c</sup>	Relationship Status	Support	Neighborhood
1	-	-	M	-	-	-	-
2	25	Living comfortably	M	PT	Single	Family	Suburban
3	28	Getting by	B	U	Married	Spouse, friend, family	Suburban
4	28	Living comfortably	B	U	Single	Family, community programs	Suburban
5	34	Living comfortably	B	U	Living with partner	Partner, family, social media	Suburban
6	24	Getting by	B	PT	Single	Family, social media	Suburban
7	-	Getting by	B	D	Living with partner	Partner, family, friends, social media	Suburban
8	32	Living comfortably	M	U	Married	Partner, family, friends, social media	Rural
9	36	Living comfortably	B	U	Married	Partner, family, friends, social media, community programs	Suburban
10	27	Living comfortably	B	U	Engaged	Partner, family, social media, community programs	Rural
11	35	Getting by	B	U	Living with partner	Partner, community programs	Suburban
12	41	Getting by	B	U	Living with partner	Partner, family, friends, group	Rural
13	27	Getting by	B	U	Living with partner	Partner, friends, local community	Suburban
14	37	Living comfortably	B	U	Living with partner	Family, social media, community programs	Rural
15	35	Living comfortably	M	FT	Married	Partner, family, friends, social media, community programs	Suburban
16	32	Living comfortably	B	PT	In a relationship	Partner, family, friends, social media, community programs	Urban

*Note.* Missing data is indicated by a dash.

<sup>a</sup> Standard of living is self-reported. <sup>b</sup> MAT indicates the type of Medication Assisted Treatment the patient was on (M- methadone or B- buprenorphine). <sup>c</sup> Employment status (U-Unemployed, FT-Employed Full Time, PT-Employed Part Time, D-Disability).

## **Research Question Two Results**

Six main processes that women use to manage their pregnancy during recovery were identified in the grounded theory study and included (a) navigating social support, (b) putting in the work of recovery, (c) maintaining vigilance, (d) performing self-cares, (e) acquiring new skills and knowledge, and (f) advocating. Two personal modifying factors were found to impact how refined the six processes were used by women, with individuals with either more time in recovery or prior motherhood experience having more advanced utilization of the processes. Additionally, women identified factors that facilitated as well as created barriers to the six processes they use.

Themes that were identified as facilitators included having a positive mindset, having a strong support system, and working with providers who were knowledgeable about addiction and recovery, specifically medication assisted treatment. Themes that were identified as barriers included stigma and frequency of required appointments. The themes that emerged from the analysis meant to answer research question two are presented here.

### **Facilitators**

One of the most commonly identified facilitators of managing the needs of the dyad was having a positive mindset or “focusing on the positive side of life” (Participant 3). Women identified that they used a positive mindset about their process of becoming a mother and about their recovery. This positive mindset was often found in women who surrounded themselves with people that encouraged them to “stay as positive as possible” (Participant 7). As they maintained this positive mindset and positive social circle, they were protected against negative comments or experiences of stigma that they

encountered. One woman stated that she would advise other women in recovery to remember that people will “say whatever they want to say, and at the end of the day, it’s up to you to decide what you want to take” (Participant 3).

Having a strong support system was identified as a second theme that mothers believed was crucial for their success during pregnancy, postpartum, and in their recovery. Types of support included meeting physical needs, such as identifying resources to help with food, housing, transportation, or childcare, as well as emotional support. Emotional support encompassed aspects such as preparing for motherhood, dealing with aspects of recovery, such as managing cravings, or dealing with negative judgments or stigma by others. The sources of support varied by woman and could include family, friends, providers, women in their recovery groups, community groups or organizations, and individuals they met on social media. Many women identified online groups or communities as a source of support that they relied heavily on (see appendix H). During the birthing and hospitalization experience, key support was provided by nurses.

Women expressed they knew that certain people in their lives were capable of distinct types of support, and they learned who to go to depending on what need they had.

I feel like because they play different roles, my counseling is kind of the people I go to when I’m having cravings and struggles, and um, like looking for skills on how to cope with them. But I go to my family for like, emotional support.  
(Participant 6)

When describing the importance of support for recovery, one woman stated, “I had a lot of support...I had my counseling. I had my family. And I feel like that was the most important for me” (Participant 6). Having a personal support system created an internal desire to stay with their recovery program. One mother described the feeling of

what it was like to have the support of her family as, “It made me feel like I need to stick to what I’m being told, attend all the sessions” and later stated the impact her family had on her ability to overcome negative or stigmatizing experiences “the discrimination I was facing...like when you talk it out it feels better. So, you feel like someone really understands you” (Participant 3).

Many mothers stated they had developed the ability to recognize when individuals in their life were no longer a healthy source of support for the mother and to end those relationships. The most prominent example of this emerged in stories of women who were able to end relationships with people that who had been part of their use of opioids before recovery. One mother describes how she handled ending those relationships:

I know people don’t really like hearing, ‘hey, you’re a bad influence for me,’ so...I just decided to delete them off Facebook, delete their numbers, block them so that I don’t have the temptation to go back to them...I think once I surrounded myself with people that were clean and building me up, then I think things got better. (Participant 6)

When obstetrical or pediatric healthcare providers were knowledgeable about addiction and recovery and provided care in a nonjudgmental manner, women were able to trust them, and those providers were valued members that facilitated management of pregnancy, parenting, and recovery. These trusted providers assisted women in learning what to anticipate during all stages of pregnancy, labor, parenthood, or their recovery. Women reported receiving information from providers and using that provider as a resource to increase their knowledge on topics such as Neonatal Abstinence Syndrome and where to go for additional reliable information. Knowledgeable providers provided care that considered their recovery efforts. A frequently described example was when

providers had a plan to manage labor pain or postpartum pain that was amenable to the woman's recovery efforts.

Providers also acted as a source of emotional support when they created a comfortable environment for questions and allowed for open communication. One mother described an experience with her pediatrician that described the powerful impact the words from a provider can have in reframing their self-appraisal when the provider demonstrates nonjudgmental care.

I went to my first pediatrician appointment...my daughter's pediatrician, was telling me that when the nurse from the hospital called to set up the appointment, she said like 'are you sure you want this baby? He's a methadone baby'...[he] let her know how he felt about that statement...he was like I absolutely knew that I wanted this baby because I knew the mom loves this baby enough to get help...that changed my perspective completely. Just like, I felt kind of sorry for myself, that all these people judged me and then I was like no, he's right, like, if anything, it shows that I do care and I am a good mom because you know I am taking care of myself. (Participant 8)

Nurses who were knowledgeable in aspects of addiction and recovery acted as a source of informational support and facilitated the process of managing parenting and recovery needs by explaining neonatal assessments and involving mothers in the plan of care. Because neonates stayed in the hospital for longer than 72 hours due to possible withdrawal from the MAT medications, mothers had additional opportunities to ask questions of the nurses and to learn specific techniques to meet care needs of their newborn.

When women's providers were not perceived as knowledgeable, women remarked that communication broke down and care was poorly coordinated. Mothers expressed confusion and a lack of confidence in the healthcare team when each provider was stating information they perceived to be incorrect or was in contradiction to other

providers. Women tried to adjust by only asking questions specific to the specialty of the provider they were working with at the time. However, this did not create a seamless plan of care. When women experienced situations where plans changed at the last minute—such as needing to give birth at a different hospital than planned—the care discontinuity also complicated their ability to feel like an active part of planning care for their newborn.

### **Barriers**

As identified in the themes addressing research question one, stigma significantly impacts the experiences that mothers in recovery have during their pregnancy, postpartum, and early motherhood. Both actual and anticipated stigma was identified by women when interacting with healthcare providers. Specifically, women experienced the most stigma when working with unsupportive healthcare providers or providers who did not agree with the use of MAT in pregnancy. One woman discussed how detrimental to the provider-patient relationship it was when her provider acted in a judgmental way when she acknowledged her opioid use during a prenatal visit.

I didn't go back to see her, to sit in that doctor's office, not after the way she treated me and talk[ed] to me like I was a dog. She believes that addiction is not a disease that I should just suck it up. Um, it's pretty much what she said you should just with nothing, just go through the withdrawals, just detox and be done with it like it's just that easy. (Participant 12)

Not all women experienced direct stigma when working with healthcare providers, but most women expressed that they held an anticipatory fear of experiencing stigma because mothers they knew who had given birth while on MAT had experienced it. Mothers expressed gratitude when they did not encounter stigma within the healthcare setting.

When women did experience stigma from healthcare providers they felt the patient-provider relationship became strained. Their stigma experience caused them to avoid prenatal or postnatal visits, to hold fear about being honest and upfront with providers, and to have negative birthing experiences. One mother recalls that she did not have access to her MAT medications during her birth hospitalization. The woman recalls her provider expressing that MAT was inappropriate to manage recovery from OUD, “she [the provider] believes that I was substituting one drug for another drug...my [recovery] doctor had to call me in a prescription, and we went and got it from the drug store” (Participant 10). Barriers to a typical medication require significant additional work on the mother’s part to coordinate with her recovery provider to get the needed care.

A second theme identified as a barrier was the frequency of appointments during the prenatal and postpartum period. The sum total of prenatal care, MAT management, newborn care, and appointments for additional resources, such as setting up community or government resources such as Women, Infants, and Children (WIC) was overwhelming to many women. This required strategies such as writing all appointments down on the calendar or scheduling multiple visits back-to-back to decrease the number of days they needed to travel to appointments.

Mothers expressed some dissatisfaction over all the appointments stating, “it was a lot between all my appointments between my medication and my just regular pregnancy visits” (Participant 4). One woman taking methadone stated,

basically, the hardest part was just having to get up and go to the clinic every single day. I go six days a week, and then I get to take home for Sunday. It is a half hour drive just to get there, so I spend an hour everyday driving to this. (Participant 1)



In addition to the visits for medication or medication adjustments, women had to juggle their appointments for group therapy, individual counseling, drug screens, and prenatal or postnatal appointments. For women with older children, this meant needing to coordinate childcare, too. When discussing how time consuming all the appointments were, one participant stated, “luckily, I wasn’t working at the time, so that helped. If I was working, it might have been a lot harder to have done it...If I was working there’s no way I could’ve [been in] the program” (Participant 12).

Due to the timing of data collection occurring during the Covid-19 pandemic, many women had experienced group therapy and individual counseling sessions being moved to a virtual format. This provided a little relief in the juggling of appointments and was especially seen as helpful during the postpartum period when mothers would have needed to bring their infants with them or find childcare for each meeting.

### **Additional Results**

Manuscript two, titled “Engagement in Online Communities by Mothers in Recovery” presents a detailed description of a secondary analysis of themes identified for research question two (see Appendix H). A narrative approach was used to address the following research question:

For women who are managing OUD recovery with medication-assisted treatment (MAT), what role did engagement with online communities play in their pregnancy, postpartum and early parenting experience?

## **Chapter 5: Discussion and Implications**

The aim of this study was to investigate the processes women use to meet the needs of the maternal-infant dyad while self-managing OUD. The purpose of this study was achieved through a constructivist grounded theory inquiry and analysis. A discussion of the major study findings is presented in the manuscript titled, “How Women in Recovery Navigate Pregnancy, Postpartum, and Early Motherhood: A Grounded Theory Study” (Appendix G).

Analyses to meet the second research question, “What key factors did women perceive to be facilitators and barriers that influenced their efforts to meet the needs of the mother-infant dyad?” led to an in-depth examination of the experience many participants shared: the experience of engaging in online communities for pregnancy and mothering while using MAT for OUD. A discussion of the results of that analysis is presented in the manuscript titled, “Engagement in Online Communities by Mothers in Recovery” (Appendix H).

This chapter contains a discussion of findings and implications of the grounded theory study that were not included in the grounded theory manuscript including (a) additional discussion of the findings, (b) implications for practice, (c) implications for vulnerable populations, (d) implications for nursing education, and (e) recommendations for further research.

### **Discussion of the Findings**

#### **Additional Links to Existing Literature**

The findings from this study align with aspects of previously published theories and concepts within the addiction and maternal-child literature. Links to the concept of

wholeness of the maternal-child dyad, domains and elements of recovery, and to theories of self-care of chronic illness, maternal role attainment, attachment and maternal family-centered care are addressed here. The theme of provider knowledge identified as a facilitator by research question two is also discussed. Alignment of this study's findings with previous theories and current research strengthens the credibility of the theory that emerged from this data analysis.

### ***Wholeness***

Chapter two presented four defining attributes of the concept of wholeness which were identified through the process described by Fawcett (1989). The first defining attribute of wholeness identified was the idea that a human being is greater than the sum of their parts (Brouse, 1992; Cowling, 2000; Cowling & Swartout, 2011; Little, 1992; Lockheed, 1986; Polakoff & Gregory, 2002; Williams, 1988). This integral nature of wholeness means a person cannot dissociate from their illness or dysfunction (Zust, 2006). The second defining attribute is that wholeness is the inherent nature of personhood, not an ideal to be achieved by a person (Cowling & Swartout, 2011; Newman, 1997). In the maternal-newborn population, wholeness requires the consideration of the maternal-newborn dyad as an integrated, whole unit. Instead of seeking to find wholeness, nurses and other healthcare providers should work to appreciate wholeness of individuals and dyads in the maternal-newborn population. The third defining attribute is that wholeness is relational (Borge & Fagermoen, 2008; Burkhardt, 1985; Cowling & Swartout, 2011; Newman, 1997; Polakoff & Gregory, 2002; Widang & Fridlund, 2003; Williams, 1988; Zust, 2006). Individuals are in constant relationship to their environment, which is a living and ever-changing system (Borge &

Fagermoen, 2008; Cowling & Swartout, 2011; Leach, 2006; McElligott, 2010; Milstein, 2008; Polakoff & Gregory, 2002; Williams, 1988). The final defining attribute is personal autonomy (Borge & Fagermoen, 2008; Burkhardt, 1985; Leach, 2006; Lockheed, 1986; Polakoff & Gregory, 2002; Struthers et al., 2008; Swift, 1994; Widang & Fridlund, 2003). An individual/dyad must have autonomy for their health and must be an active participant in the decision-making process.

As a result of this concept analysis, a new definition of wholeness for the maternal-newborn population emerged. For the maternal-newborn population, from pregnancy through postpartum, wholeness requires that we view the dyad as our unit of focus instead of a separate mother and separate newborn. Because care of mother and fetus or care of mother and neonate is so inextricably linked, we must examine wholeness of the maternal-infant dyad.

There is conceptual overlap between the themes that emerged from the grounded theory study and the wholeness definition identified in this concept analysis. The theme *Identity* identified through this study aligns with the view of wholeness that requires we view the dyad as our unit of focus. The women in the grounded theory study described a difficulty in reconciling aspects of their recovery identity and motherhood identity because they were at odds. Mothers had a continued recognition that the medication they needed for recovery was impacting their identity as a good mother, leading to expressions of guilt. The inability to focus on one identity without impacting their other identity highlights the first defining attribute of wholeness, that a person is greater than the sum of their parts (Brouse, 1992; Cowling, 2000; Cowling & Swartout, 2011; Little, 1992; Lockheed, 1986; Polakoff & Gregory, 2002; Williams, 1988).

The process of *Navigating Social Support* aligns with the third defining attribute of wholeness, that it is relational, and that people are in constant relationship with their environment (Borge & Fagermoen, 2008; Cowling & Swartout, 2011; Leach, 2006; McElligott, 2010; Milstein, 2008; Polakoff & Gregory, 2002; Williams, 1988). Additionally, individuals are in relationship to others within and outside the healthcare system, as well as their social supports (Borge & Fagermoen, 2008; Burkhardt, 1985; Newman, 1997; Widang & Fridlund, 2003; Zust, 2006). The significance of social support and relationships expressed through the interviews demonstrated that both the mother in her recovery and her motherhood role were identifying, using, and providing support throughout their pregnancy and postpartum period.

The process of *Advocating* aligns with the fourth defining attribute of wholeness: personal autonomy (Borge & Fagermoen, 2008; Burkhardt, 1985; Leach, 2006; Lockheed, 1986; Polakoff & Gregory, 2002; Struthers et al., 2008; Swift, 1994; Widang & Fridlund, 2003). Within this process, women were advocating for involvement in the decision-making specific to their plan of care in the hospital. The women voiced desire to have input into their pain management regimen during and after birth, the cares provided to their newborn, and the assessment and decision making around treatment of NAS when needed. The desire to be an active participant in their health care was strong and most frequently voiced by the mothers who saw themselves as more stable in their recovery. Recognition of the many processes that women use to meet the needs of the maternal-infant dyad, led to an understanding that women using MAT to manage recovery during pregnancy and early mothering are active, engaged self-managers of both recovery and motherhood.

### ***Domains and Elements of Recovery***

Domains and elements of recovery, identified by Kaskutas et al. (2014) aligned with findings from the grounded theory study. Elements such as, “being the kind of person that people can count on”, “improved self-esteem”, “having tools to try to feel inner peace when I need to”, “taking care of my mental health more than I did before”, “getting along with family or friends better than I did before”, and “learning how to get the kind of support from others that I need”, (Kaskutas et al., 2014, p. 1004) were represented in the processes *Performing Self Cares*, *Advocating*, and *Navigating Social Support*. Kaskutas et al. (2014) also identified the impact of timeframes of sobriety in recovery impacting the domains, further supporting the finding that *Freshness in Recovery* is a personal modifying characteristic that impacts processes of recovery. One aspect not identified by Kaskutas et al. (2014), was whether differences existed in the domains and elements of recovery for those that indicated they were in medication-assisted recovery compared to other recovery modalities.

The domain of “Spirituality of Recovery” (Kaskutas et al., 2014, p. 1005) was not identified in themes or subthemes within the interviews conducted (Kaskutas et al., 2014, p. 1005). This is potentially due to recovery modalities with a high spirituality or fellowship focus, such as Alcoholics Anonymous and Narcotics Anonymous, historically not viewing MAT as being sober (Laudet, 2009). This difference in the definition of sobriety may be the cause of why elements of the spirituality domain did not emerge during the interviews.

### *Self-Care of Chronic Illness*

Due to the chronic nature of addiction with cycles of relapse and remission being common and recognition that treatment and prevention efforts can be as successful as for other chronic illnesses, the use of a chronic disease management model could be effective (ASAM, 2019; McLellan et al., 2000; Saitz et al., 2008). Similar to other chronic illnesses, the goal of addiction treatment or recovery is self-management (DuPont et al., 2015; Saitz et al., 2008). The middle range theory of Self-Care of Chronic Illness, which was influenced by Orem's Self Care Nursing Deficit Theory, focuses on the process of self-care from the individual perspective (Orem, 2001; Riegel et al., 2012). The main concepts of the middle range theory are self-care maintenance, self-care monitoring, and self-care management. These three main concepts were reflected in the findings of the current study. Self-care maintenance referred to the behaviors or specific acts that are done to improve or maintain wellbeing (Riegel et al., 2012). This self-care maintenance concept can be seen by the processes of *Putting in the Work of Recovery* (the day-to-day activities either recommended or required by providers specific to their recovery), *Performing Self-Cares* (the self-identified activities that aid in their recovery), and *Maintaining Vigilance* (the process of reflection and evaluation of the usefulness and effectiveness of the behaviors). Self-care monitoring encompasses the surveillance or body monitoring that is required (Riegel et al., 2012). The recognition of physical or emotional changes and the ability to understand the severity of those changes allows for an individual to act, and this is also reflected in the *Maintaining Vigilance* process identified in this study. According to Riegel et al. (2012), self-care monitoring is the link between self-care maintenance (performing the actions) and self-care management. Self-

care management is the evaluation the change and determination if action is needed along with the attention to the effectiveness of the treatment or therapy that was performed.

The processes of *Acquiring New Skills and Knowledge* and *Navigating Social Support* align with some of the factors that impact self-care in Riegel's middle range theory (Riegel et al., 2012). While Riegel identified experience and skill as a factor that would impact the ability to perform self-care, the current study identified how individuals actively sought out new knowledge to increase their skills, such as identifying best practices in taking their specific MAT medication. The more experience an individual has in self-care maintenance and monitoring can increase their success in self-care management, which further supports the personal modifying factor of *Freshness in Recovery* that was identified in the current study. Individuals who have been in recovery for a greater period of time, likely have more experience in both knowing the self-care behaviors they need to perform and monitoring physical and emotional symptoms of their addiction, allowing them greater success in acting on those changes. Additionally, this study identified how individuals were actively engaged in navigating relationships (building, strengthening, repairing, or ending relationships) to have support, which was identified as a factor impacting self-care.

Many women discussed anticipating stigma or experiencing stigma directly. Mothers with OUD have reported feeling judged or stigmatized by healthcare workers during the prenatal and postpartum period (Rockefeller et al., 2019). The stigma surrounding opioid use in pregnancy can have significant detrimental effects on the dyad during pregnancy and in the postpartum period. Mothers report isolating themselves, feeling nervous about sharing information, and missing prenatal appointments in order to



minimize detection of substance use due to stigma (Recto, 2020; Rockefeller et al., 2019; Stone, 2015). Women interviewed for the study expressed similar concerns regarding anticipated or actual stigma throughout all aspects of pregnancy, postpartum, and early motherhood.

### ***Maternal Role Attainment/Becoming a Mother***

There were both first time and experienced mothers in the sample for the grounded theory study. Ruben (1967) describes the maternal role attainment process taking approximately four months, with additional time needed in situations where stress or other personal factors impact the transition. In this study, seven of the 16 participants were interviewed when their child was less than 4 months of age, which may have shaped their perception of how they managed their recovery and how they were forming their maternal identity.

Women who had navigated the transition to the maternal role with a previous pregnancy managed this pregnancy and mothering experience differently than those with no prior experience. First-time mothers spent a significant amount of time learning about and gathering resources on newborn cares as compared to women with prior motherhood experience. Mothers that previously had a child while on MAT had familiarity with aspects of newborn cares specific to NAS but gained more knowledge on current trends in hospital settings for care of a newborn with NAS. First-time mothers described processes that aligned theoretically with the taking-on or taking-in phases of the Maternal Role Attainment theory (Rubin, 1967). Women with previous experience of motherhood described their management processes more consistent with Rubin's letting-go phase and described aspects of adjusting to their new role as a mother with an additional child.

Additionally, these experienced mothers used a strategy of comparing their current pregnancy and postpartum experiences to previous experiences to appraise how successful their management was.

As identified in the literature review found in chapter two, nurses are often viewed as role models of child-care by women in the maternal role attainment process (Rubin, 1967). Because NAS requires an extended hospitalization, mothers had a longer time to interact with nurses. Some mothers appreciated the additional time spent learning from the nurses. In situations where women felt they were experiencing stigma from the nurses, this extended hospitalization stay did not always result in additional knowledge for mothers and may have been an added source of stress.

Few specific nursing interventions aimed at assisting women in the stages of Maternal Role Attainment or Becoming a Mother have been researched (Mercer & Walker, 2006). The need exists for more research to be done examining how healthcare providers can offer guidance on preparation for this new role of Motherhood and early interventions to promote healthy mother-infant attachment and interactions, not just infant caregiving instructions, as was described in this study.

### ***Attachment Theory and Family Centered Maternity Care***

Attachment theory identifies the importance of the mother and infant dyad developing an interactional relationship, with an emphasis on the responsiveness of the mother to the infant's needs (Bell & Ainsworth, 1972; Bowlby, 1978). Kennell and Klaus (1976) added the idea of a sensitive period highlighting the importance of early and prolonged contact between the mother and newborn for attachment purposes. Numerous studies have identified in-hospital nursing interventions such as rooming-in, parental

presence, breastfeeding, swaddling, and low-stimulation environments as ways to increase contact to promote a mother's efforts to meet the needs of newborns with NAS (Rizk et al., 2019; Wachman et al., 2018; Whalen et al., 2019). Use of new assessment methods for NAS focusing on the ability of the newborn to perform functions such as eating, sleeping, and their ability to be consoled, versus the traditional Finnegan Neonatal Abstinence Scale, have also demonstrated the ability to increase maternal involvement while maintaining positive outcomes for newborns with NAS (Grossman et al., 2017; Wachman et al., 2018; Whalen et al., 2019). In addition to helping provide comfort and care to infants with NAS, breastfeeding and continued maternal-infant contact increased feelings of connection and motherly love by mothers in the early postpartum period (Roseth et al., 2018).

Mothers in the current study discussed the desire to be highly involved in all newborn cares after birth. Women who had researched information on NAS discussed learning about skin-to-skin contact and the mother's role in soothing their newborn to help manage NAS symptoms. Mothers also researched information on varying assessment tools that may be used to evaluate a newborn's coping with withdrawal and talked with healthcare providers about which assessments were used in the hospital where they planned to deliver. The findings in the current study of mothers wanting to room-in and wanting to breastfeed align with findings in qualitative studies by Howard et al. (2018) and Rockefeller et al. (2019). This active engagement in care planning and advocacy for their newborns demonstrates the presence of attachment-promoting behaviors by the mothers in this study.

## **Additional Discussion for Research Question Two**

### ***Importance of Provider Knowledge***

A particularly important aspect of the findings from the analysis of the second research question was that pregnant women with OUD were most helped when their providers were knowledgeable in management of addiction and recovery aspects of care. This allowed women to work with their providers as facilitators to their efforts to meet the in-hospital and outpatient needs of the maternal-infant dyad. In this way, providers have a responsibility to understand how their practice should change to promote non-stigmatizing, highly skilled management of care for women on MAT.

Interdisciplinary work groups and collaboratives have identified guidelines for evidence-based practice in caring for women and their infants impacted by OUD (ACOG, 2017; Hudak & Tan, 2012; Krans, Campopiano et al., 2019; SAMHSA, 2016). Ensuring these guidelines are followed requires education to all providers who will interact with pregnant and postpartum women and their infants. Implementation of state-wide collaboratives can have a positive impact on implementing best practices to a wide range of facilities within a state (Krans et al., 2019). Women in the current study identified a breakdown in communication between providers when some providers were not knowledgeable about addiction and MAT. Collaboration between disciplines including obstetric providers, addiction providers, anesthesiologists, and nursing, and following evidence-based guidelines will improve outcomes and satisfaction in care (Martin et al., 2019).

Ford et al. (2021) demonstrated improvement in healthcare providers attitudes towards mothers with OUD through educational sessions focused on addiction as a chronic disease with a focus on the pathophysiology of addiction and the benefits of medication assisted treatment. The educational sessions were geared towards disciplines working in Neonatal Intensive Care Units. It would be beneficial for future work to include all disciplines that will work with women during the antepartum, intrapartum, and postpartum periods. Education to change provider's attitudes towards mothers with opioid use is a first step in providing evidence-based care to this population.

### **Limitations**

There are several current practice approaches to managing recovery from OUD, including programs that focus on abstinence (such as Alcoholics Anonymous or Narcotics Anonymous), natural recovery, and pathways with a focus on harm reduction, such as medication for addiction treatment. This study was focused on individuals who used MAT to manage recovery. Therefore, the processes identified by these mothers may differ than the processes used by mothers following one of the other recovery management strategies. Additionally, women who are new to recovery or who are still in active addiction may not have yet adopted the identity of recovery. Those women may be utilizing processes that differ than those identified by women in this study.

Recruitment was impacted by the Covid-19 pandemic which created challenges reaching out to the local community programs and clinics. Initial recruitment plans relied heavily on building community relationships and identifying potential participants through local programs, clinics, and group meetings. Due to the Covid-19 pandemic, recruitment efforts moved to a virtual or online format. While this allowed for a sample

of women from anywhere in the United States, building trust and creating relationships with groups online was challenging. One private online support group was willing to share the study flier. Recruitment heavily reliant on a sample of women in online groups may have impacted the homogeneity of the sample of participants. The sample consisted of women with a relatively high level of education, a high level of unemployment, and a high level of individuals living in a suburban neighborhood. Considering the limitations of this sample will be important when applying the theory to women that do not match the demographics of the women who participated.

As with all research, there is a potential for researcher-induced bias. The researcher worked to minimize bias through the use of grounded theory data collection and analysis techniques including memo writing, line by line coding, constant comparative analysis, and meeting with the committee chair regularly to discuss data analysis and emerging themes in the data (Charmaz, 2014). Memos were maintained to keep record of decision-making processes as well as to uncover and explore assumptions of the data and phenomenon.

### **Implications for practice**

Findings from the study support the need to improve health care providers' understanding of addiction and recovery principles and care specific to women with OUD during their pregnancy and the postpartum period. Improved knowledge of how MAT and recovery status impacts care for pregnant and postpartum women can improve collaboration between providers, create better care experiences and improve outcomes for these dyads. While strong interdisciplinary care can be seen in MAT programs during the prenatal period, many women experienced fragmented care at the time of delivery while

in the hospital. With inconsistent protocols and guidelines between hospitals and at the state level, it is difficult for women to know what to anticipate and for all women and infants to receive the same level of care. Work at the state and federal level is needed to support an evidence-based approach for all women regardless of where they live. Health care providers can be at the forefront of advocating for policy changes that support best practices in care and those that work to decrease stigma for these families.

### **Implications for Vulnerable Populations**

Opioid use during pregnancy is lower than in the general population, however, the rate of births complicated by maternal opioid use is rising and has quadrupled between the years of 1999 to 2014 (Massey et al., 2010; Smid et al., 2019). Pregnancy and the postpartum period are times of increased vulnerability for mother-infant dyads impacted by OUD (Martin et al., 2019), with the postpartum period a particularly vulnerable time for women with OUD due to a high rate of MAT discontinuation and a high rate of maternal overdose death (Schiff et al., 2018; Wilder et al., 2015). Stress from the postpartum period and the added stress of caring for a newborn may be factors in the high rate of relapse. Greater continuity of care for women during the postpartum time is needed with a focus on ensuring their stability in recovery following birth.

Women with OUD are at risk for impaired attachment and responsiveness to infants (Mirick & Steenrod, 2016). More research on ways to teach and strengthen those areas that impact the attachment and bonding between the mother and infant are needed and can be a focus of the postpartum period. Evidence-based interventions and evaluation tools are needed to support bedside healthcare practitioners working one on one with

these dyads. Nursing can play a critical role in the evaluation and implementation of these interventions.

### **Implications for Nursing Education**

Findings from this study support the need for an increased focus within nursing education on the preparation of providers of care who fully understand the experience of women dealing with addiction and recovery. An increased focus on the benefits of viewing addiction through a chronic illness lens and a harm reduction model will help to provide a background that will encourage students to develop a practice that is nonjudgmental and rooted in theory. This study further adds to the current literature on the role that stigma from healthcare providers plays in the pregnancy, birth, and early parenting experience of mothers and infants impacted by OUD. Caregivers' personal attitudes or values cannot be a barrier to supporting patients in their work as mothers.

Additionally, this study identified how working with educated providers facilitates the work that women are already doing to manage the needs of the mother-infant dyad, underscoring the need to encourage lifelong learning. Highlighting within the nursing curriculum the importance of and strategies to keeping current in one's profession will improve student's understanding of their role of lifelong learning.

### **Recommendations for Further Research**

This study used a constructivist grounded theory approach to develop a situation specific theory for how women who use MAT for their recovery during their pregnancy, postpartum, and early motherhood period meet the needs of the mother-infant dyad. Additional research studies are needed to test the developed situation specific theory.



Based on the guidelines for caring for women and infants impacted by OUD, it is important to focus on the subset of mothers using MAT (ACOG, 2017; Hudak & Tan, 2012; Krans, Campopiano et al., 2019; SAMHSA, 2016). There is room for growth in research designs specifically targeting this population of women. Previous research on recovery has identified quality of life surveys and Life in Recovery surveys that have been used to evaluate the experience of individuals in recovery in general (Kaskutas et al., 2014). It would be beneficial to look specifically at the population of mothers using MAT to see what differences exist, in order to better support and meet the needs of mothers in recovery from OUD. Finally, because this study focused on the mother-infant dyad, it would be important to expand the research into a family-centered approach and include partners or additional caregivers to provide a broader context to the lived experience.

### **Conclusions**

Findings from this grounded theory study expanded on work of previous researchers in the areas of recovery in pregnancy. The findings identified six processes mothers use to meet the needs of that maternal infant dyad impacted by OUD during pregnancy and the postpartum period. The proposed situation specific grounded theory demonstrates the active engagement by mothers who use MAT for their recovery during pregnancy and postpartum and how personal modifying factors, such as previous experience with motherhood and freshness of recovery, impact the processes used by these mothers.

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## Appendix A: Study Flier



INSTITUTIONAL REVIEW BOARD  
*Recruitment flyer*  
Protocol Number: HR-3618  
IRB Approved 10/23/2020



### Join a Confidential Research Study About New Moms in Opioid Recovery

Nurses from Marquette University want to hear from new moms about their experience of being pregnant while in recovery. We are looking for women within one year of the birth of their child who were taking Methadone or Buprenorphine during their pregnancy.

Women who join the study will meet with the researcher one or two times for an interview about managing their recovery during pregnancy and after birth. The interview will last about 1 hour.

If you join, you will receive a \$20 gift card for the time you spent working with us.

Nicole Mattson MS, RN, CNS-BC is the lead researcher and can answer any questions you might have.

You can call her at 414-288-3855 or you can email her at [Nicole.Mattson@Marquette.edu](mailto:Nicole.Mattson@Marquette.edu)

If you are interested, please click here for more information:  
<https://bit.ly/2GpWj5P>



## Appendix B: Interview Guide

### Interview Guide: Maternal-Infant Dyadic Care

Today is \_\_\_\_\_ and it is \_\_\_\_\_ am/pm.

“I’m Nicole Mattson and I am a nurse and a PhD student at Marquette University. I’m interested in the experience of mothers and their recently delivered babies. Today we will be talking about your pregnancy, birth, and early mothering experience. I will be audio recording the interview. Is that okay with you?”

“Great. Let’s start.

- Would you tell me about your recent pregnancy and birthing experience?
- Tell me what it was like to manage your opioid recovery during your pregnancy and after birth.
- When, if at all, did you first experience/notice yourself feeling like a mother?
  - Additional prompts:
    - What was it like? If you recall, what were you thinking then? Who if anyone influenced your idea of motherhood?
- What was it like to think about you and your baby as a pair? Tell me when, if ever, you thought about yourself as part of mother-infant pair?
- Tell me how you went about managing your recovery and the needs of you and your baby during pregnancy? What did you do?
- Tell me how you go about managing your recovery and the needs of you and your infant after birth? What do you do?

- Tell me about the people that were around during your pregnancy and after birth.
  - Additional prompts:
    - Was there anyone that made things harder for you during your pregnancy and after birth?
    - Was there anyone that helped you during your pregnancy and after birth?
- Tell me about your experience in the hospital.
  - Additional prompts:
    - Who was visiting you? What were your hospital days and nights like?
    - What kinds of things did the nurses do when they were caring for you?
    - What kinds of things did the nurses do when they were caring for your baby?
- What, if anything, could have helped you to better prepare for your experience in the hospital with your baby? For going home with your baby?
- As you look back on your pregnancy and postpartum period, are there any events that stand out in your mind? Could you describe each?
- What advice would you give to other women who use opioids during their pregnancy, birth and early parenting experience?
- Is there anything else you would like to tell me?

## Appendix C: Demographic Questionnaire

### Demographic Questionnaire

Please answer a few questions to help me know more about the women who are participating in the study:

What is your current age? \_\_\_\_\_

Which baby is this for you?

1<sup>st</sup> \_\_\_\_\_

2<sup>nd</sup> \_\_\_\_\_

3<sup>rd</sup> \_\_\_\_\_

4<sup>th</sup> \_\_\_\_\_

5<sup>th</sup> \_\_\_\_\_

How many months old is your baby? \_\_\_\_\_

What hospital did you have your baby at? \_\_\_\_\_

Which medication did you use during pregnancy for medication assisted therapy?

☐ Buprenorphine

☐ Methadone

☐ None

☐ Other \_\_\_\_\_ (specify)

Which substances did you use before pregnancy?

☐ Cocaine

☐ Heroin

☐ Marijuana

☐ Tobacco

☐ Alcohol

☐ Amphetamines

☐ Opiates

☐ Poly-drug

☐ Other \_\_\_\_\_ (specify)

What is your highest level of education?

- ☐ partial high school
- ☐ high school or GED
- ☐ partial college
- ☐ college graduate
- ☐ graduate degree

In your opinion, what is your family's standard of living?

- ☐ very poor
- ☐ poor
- ☐ getting by
- ☐ living comfortably
- ☐ very well off

What best describes your employment status?

- ☐ unemployed
- ☐ employed full time
- ☐ employed part time
- ☐ other \_\_\_\_\_ (specify)

What best describes your relationship status?

- ☐ single
- ☐ in a relationship
- ☐ living with a partner
- ☐ married
- ☐ separated
- ☐ divorced
- ☐ other \_\_\_\_\_ (specify)

Who gives you support? (Check all that apply)

- ☐ My partner or spouse
- ☐ Another family member
- ☐ My in-person (IRL) friends
- ☐ Friends or acquaintances on social media
- ☐ Community program
- ☐ Other \_\_\_\_\_ (specify)

What do you consider to be your racial/ethnic identity?

- ☐ White/Caucasian
- ☐ Black/African American
- ☐ Black/African
- ☐ Latina
- ☐ Asian/Pacific Islander
- ☐ Native American
- ☐ Mixed Race/ethnicity \_\_\_\_\_ (specify)
- ☐ Other \_\_\_\_\_ (specify)

In what type of neighborhood do you live?

- ☐ Urban
- ☐ Suburban
- ☐ Rural

## Appendix D: IRB Approval



Office of Research Compliance  
 Schroeder Complex, 102  
 P.O. Box 1881  
 Milwaukee, Wisconsin 53201-1881  
 P 414.288.7570  
 F 414.288.5291  
 W [marquette.edu/researchcompliance](http://marquette.edu/researchcompliance)

Date: 07/17/2020

HR-3618

Principal Investigator: Nicole Matteson

Faculty Advisor: Dr. Jennifer Ohlendorf

Department: Nursing

Study Title: Processes Used by Mothers in Opioid Recovery to Manage the Needs of the Maternal-Infant Dyad:  
 A Grounded Theory Study

### New Study Approval

- ☐ This protocol has been determined to be Exempt under category # as governed by 45 CFR 46.101(b) on [Date].
- ☒ This protocol has been approved as minimal risk under Expedited category # 7 as governed by 45 CFR 46.110 on 07/17/2020.
- ☐ This protocol has been reviewed by the Institutional Review Board on [date] and approved as:
- ☐ Minimal risk
- ☐ Greater than minimal risk

Please note that in-person research cannot be initiated until in-person research resumes and must follow the MU research ramp-up plan.

### Consent

- ☐ Please use the final version of the exempt information sheet or consent form submitted to the IRB. Contact the IRB office if you have questions about which document you should be using.
- ☒ The IRB approved informed consent form is attached. Use the stamped copies of this form when enrolling research participants. Each research participant should receive a copy of the consent form.
- ☐ This study has been approved for waiver of documentation of consent under 45 CFR 46.117(c)(1) or (2) of (3). Please use the approved consent information sheet with your participants.
- ☐ This study has been approved for alteration or waiving of consent under 45 CFR 46.116(d).

### Study specific notifications

- ☒ The IRB approved recruitment materials are enclosed with this letter. Use stamped copies of these documents for recruitment purposes.
- ☐ This study involves students collecting data through surveys- please review the MU Questionnaire/Survey Procedures: [http://www.marquette.edu/osd/policies/survey\\_procedure.shtml](http://www.marquette.edu/osd/policies/survey_procedure.shtml)
- ☐ This study involves recruitment emails for online surveys to be sent to 100 or more Marquette students, faculty or staff. Please review the website of the Online Survey Review Group: <http://www.marquette.edu/online-surveys/>
- ☐ This protocol involves the use of electrical or mechanical systems that require direct human contact. Electrical and mechanical safety inspections should be conducted per Marquette University Human Research Protection Equipment and Electrical Safety Testing Policy 98.106.



Office of Research Compliance

 Schroeder Complex, 102  
 P.O. Box 1881  
 Milwaukee, Wisconsin 53201-1881

 P 414.288.7570  
 F 414.288.6291  
 W [marquette.edu/researchcompliance](http://marquette.edu/researchcompliance)
**HIPAA**

<input type="checkbox"/>	This study involves accessing PHI from a HIPAA covered entity. The IRB has granted approval to access the following protected health information for the purpose of this study: • X
<input type="checkbox"/>	A HIPAA Authorization form has been approved and should be used to with study subjects.
<input type="checkbox"/>	A waiver of authorization has been approved for this study.

All changes to this protocol must be reviewed and approved by the IRB before being initiated, except when necessary to eliminate apparent immediate hazards to the human subjects. If the study is exempt, please email the requested changes to [orc@marquette.edu](mailto:orc@marquette.edu). If the study is not exempt, please submit any changes using the amendment submission form or the first page of the protocol form.

If there are any adverse events or deviations from the approved protocol, please notify the Marquette University IRB immediately.

If this study is a federally funded clinical trial, the PI is responsible for registering this study on [clinicaltrials.gov](http://clinicaltrials.gov) and submitting a final copy of the consent form and all required documentation during the life of the study.

An IRB Final Report Form must be submitted once this research project is complete. The form should be submitted in a timely fashion, and must be received no later than the protocol expiration date.

The principal investigator is responsible for ensuring that all study staff receive appropriate training in the ethical guidelines of conducting human subjects research and documenting that this requirement has been met.

Unless a separate reliance agreement is in place, please note that approval of a study with non-Marquette investigators does not indicate that Marquette University is assuming oversight for the research activities occurring outside of Marquette's purview.

Please contact the Office of Research Compliance with any further questions. Thank you for your cooperation and best wishes for a successful project.

Jessica Rice, MPH, CIP  
 IRB Manager  
 Office of Research Compliance

JR/gc



## **Appendix E: Consent Form**

MARQUETTE UNIVERSITY  
AGREEMENT OF CONSENT FOR RESEARCH PARTICIPANTS  
Processes Used by Mothers in Opioid Recovery to Manage the Needs of the Maternal-  
Infant Dyad:  
A Grounded Theory Study  
Nicole M. Mattson  
College of Nursing

You have been invited to participate in this research study. You must be age 18 or older to participate. Before you agree to participate, it is important that you read and understand the following information. Participation is completely voluntary. Please ask questions about anything you do not understand before deciding whether or not to participate.

### **PURPOSE:**

- The purpose of this research study is to understand the methods or practices used by women in recovery from opioid use to meet the needs of the mother and baby pair during pregnancy and the early period after birth. You will be one of approximately 30 participants in this research study.

### **PROCEDURES:**

- This study involves participating in one or two one-on-one interviews with a researcher. The interview will focus on your experience with your recent pregnancy, birth, and time period after the birth of your baby. Questions will also focus on how you managed your opioid recovery during these times. You will be asked to fill out a demographic data collection form at the end of the interview. The demographic data forms will ask questions including, but not limited to, your age, socioeconomic factors, and medications used for opioid use treatment during pregnancy. Notes on information that is not captured in the verbal discussion of the interview such as the setting and participant behaviors throughout the interview may be written on paper and included as data. The interview will be audio recorded to ensure accuracy.

### **DURATION:**

- Your participation will consist of one interview lasting approximately one hour. If you are willing, the researcher may contact you for an additional interview. It is anticipated that the second interview will take less time than the first interview.

### **RISKS:**

- The risks associated with participation in this study are no greater than you would experience in everyday life. Interviews have the potential to lead to some temporary emotional distress based on the topic being discussed in the interview. A list of available resources you can contact for support following the

interviews will be provided by the researcher, if desired. Although your privacy is very important, if you talk about actual or suspected abuse, neglect, or exploitation of a child or elder, or if you talk about hurting yourself or others, the researcher or other study team member must and will report this to the Bureau of Milwaukee Child Welfare, the Wisconsin Department of Children and Families Services, or law enforcement agency.

**BENEFITS:**

- There are no direct benefits to you for participating in this study. This research may benefit society by increasing our understanding of the impact of opioid use disorder on mothers and babies during pregnancy and after birth.

**CONFIDENTIALITY:**

- Data collected in this study will be kept confidential. For confidentiality purposes, all audio recordings will be stored on a password protected program. Audio recordings will later be transcribed and destroyed after 5 years beyond the completion of the study. All participants will choose a pseudonym. The consent form will be the only document containing the link between the participant's real name and pseudonym. This pseudonym will be utilized throughout transcription and data analysis. Participant contact information will be kept separate from interview data. Signed consent forms will be stored in a locked file. The data collected in this study may be deidentified and used for future research without additional informed consent. When the results of the study are published, you will not be identified by name. Direct quotes from interviews may be used in reports or publications.

**COMPENSATION:**

- You will receive a \$20 gift card as compensation for your time at the end of your interview.

**EXTRA COSTS TO PARTICIPATE:**

- All transportation to and from the study interview and any associated costs will be arranged by you, the study participant.

**INJURY OR ILLNESS:**

- If you think you have experienced a research-related injury, illness, or adverse event, you should contact the researcher (see Contact Information below). Marquette University does not have money set aside to pay for treatment, lost wages, lost time, or pain. However, you do not waive any rights by signing this consent form.

**VOLUNTARY NATURE OF PARTICIPATION:**

- Participating in this study is completely voluntary and you may withdraw from the study and stop participating at any time without penalty or loss of benefits to which you are otherwise entitled. If you choose to withdraw from the study during the interview, no additional data will be collected beyond that point. Data

collected up until the decision to withdraw will be used, unless otherwise requested.

**CONTACT INFORMATION:**

- If you have any questions about this research project, you can contact Nicole Mattson, MS, RN at 414-288-3855 or [Nicole.mattson@marquette.edu](mailto:Nicole.mattson@marquette.edu) or Jennifer Ohlendorf, PhD, RN at 414-288-4676 or [Jennifer.ohlendorf@marquette.edu](mailto:Jennifer.ohlendorf@marquette.edu) If you have questions or concerns about your rights as a research participant, you can contact Marquette University's Office of Research Compliance at (414) 288-7570.

I HAVE HAD THE OPPORTUNITY TO READ THIS CONSENT FORM, ASK QUESTIONS ABOUT THE RESEARCH PROJECT AND AM PREPARED TO PARTICIPATE IN THIS PROJECT.

\_\_\_\_\_  
(Printed Name of Participant)

\_\_\_\_\_  
(Signature of Participant)

\_\_\_\_\_  
Date

\_\_\_\_\_  
(Printed Name of Individual Obtaining Consent)

\_\_\_\_\_  
(Signature of Individual Obtaining Consent)

\_\_\_\_\_  
Date

\_\_\_\_\_  
(Participant Phone Number)

\_\_\_\_\_  
(Participant Email)

\_\_\_\_\_  
(Selected Pseudonym)

## Appendix F: Certificate of Confidentiality

### CERTIFICATE OF CONFIDENTIALITY

**Number:**

CC-OD-20-466

**Issued To**

Marquette University

**conducting research known as**

Processes Used by Mothers in Opioid Recovery to Manage the Needs of the Maternal-Infant Dyad: A Grounded Theory Study

In accordance with the provisions of section 301(d) of the Public Health Service Act, 42 U.S.C. 241(d), this Certificate is issued to the Principal Investigator, *Nicole Marie Mattson* and *Marquette University* to protect the privacy of subjects in the above named single-site/single-protocol research study, which is collecting or using identifiable, sensitive information. If there is a discrepancy between the terms used in this Certificate and section 301(d), the statutory language will control.

Research data containing identifiable, sensitive information collected during this study initiated on 07/01/2020 (and concluding on 05/01/2021) is covered by the Certificate. Identifiable, sensitive information protected by the Certificate and all copies thereof are protected for perpetuity.

The recipient of this Certificate shall comply with all requirements of subsection 301(d) of the Public Health Service Act.

This Certificate does not represent an endorsement of the research project by the Department of Health and Human Services. Information collected during the term of the Certificate is protected in perpetuity. However, this Certificate does not protect information collected from participants enrolled after the term of the Certificate.

**Typed or Printed Name and Title of  
Authorized Certifying Official**06/04/2020  
DateSarah Shane  
NIH OER Certificate of Confidentiality  
Staff

## Appendix G: Results Manuscript 1

### How Women in Recovery Navigate Pregnancy, Postpartum, and Early Motherhood: A Grounded Theory Study

#### Abstract

**Purpose and Research Question:** Maternal opioid use disorder (OUD) during pregnancy and the postpartum period has significant impact on the mother and infant. While previous research has focused on processes healthcare providers use to care for women and their infants impacted by OUD during this time, very little is known about processes women themselves use to meet the needs of their dyad. The purpose was to develop a situation specific theory of the processes used by women who are self-managing OUD with medication assisted treatment (MAT) to meet the needs of the dyad during pregnancy and the early postpartum period.

**Methods:** Study design and data analysis were aligned with a constructivist grounded theory approach. Mothers using MAT to manage recovery from addiction to opioids through pregnancy and postpartum were recruited from July 2020 to July 2021; individual semi-structured intensive interviews were conducted.

**Results:** The analysis revealed processes women using MAT for opioid recovery use to meet the needs of the maternal-infant dyad. Processes include: navigating social support, putting in the work of recovery, maintaining vigilance, performing self-cares, acquiring skills and knowledge, and advocating. These processes were impacted by three dimensions: stigma, previous experience with motherhood, and stability in recovery.

**Conclusions:** This new theory demonstrates that mothers who use MAT for their recovery during their pregnancy, postpartum, and early motherhood period are actively engaged in processes to self-manage their chronic condition and their mothering. Healthcare professionals must be aware of the role of stigma experienced in prenatal and early newborn care in order to provide care for these mother-infant dyads. With this increased understanding of the processes women engage in, the impact of stigma, and personal modifying factors, health care providers can guide development and implementation of support services that build on women's strengths.

## **How Women in Recovery Navigate Pregnancy, Postpartum, and Early Motherhood: A Grounded Theory Study**

The United States is amidst an opioid epidemic; approximately 130 Americans die daily from an opioid overdose (Centers for Disease Control and Prevention [CDC], 2018). The rate of births complicated by maternal opioid use is rising and quadrupled between 1999 and 2014 (Massey et al., 2010; Smid et al., 2019). Because of the multifactorial impacts of maternal opioid use disorder (OUD), women in recovery and their newborns are managed by providers from multiple specialties. Previous research has focused on processes healthcare providers use to guide care of women and their infants impacted by OUD. Collaborative guidelines have been published to address aspects of maternal OUD such as: 1) early identification and screening tools for opioid use, 2) use of Medication Assisted Treatment (MAT), 3) coupling of psychosocial treatment with MAT, and 4) guidelines from state and local jurisdictions for responses by child welfare agencies, providers, and hospitals (American College of Obstetrics and Gynecology [ACOG], 2017; Hudak & Tan, 2012; Krans et al., 2019; American Society of Addiction Medicine [ASAM], 2019; Substance Abuse and Mental Health Services Administration [SAMHSA], 2016). Very little is known about processes women themselves use to meet the needs of their mother-infant dyad.

Current understanding of addiction as a chronic illness that is responsive to prevention and treatment approaches, necessitates a greater understanding of what women do to self-manage (ASAM, 2019). In much of the literature, women have not been understood as active agents in management of OUD recovery. The grounded theory that results from this study is meant to inform best practices to guide nursing care of

mothers self-managing the chronic illness of opioid use disorder, pregnancy, and early parenthood. Theory-based nursing care of the mother-infant dyad living with opioid use disorder has the potential to impact a large and growing number of families and have long-lasting benefits for both mother and infant. While practice guidelines exist to guide professionals caring for the mother and infant dyad impacted by maternal opioid use (ACOG, 2017; Hudak & Tan, 2012; Krans et al., 2019; SAMHSA, 2016), no one theoretical framework addresses the self-management needs or processes of the maternal-infant dyad impacted by maternal OUD.

The aim of this study was to develop a situation-specific theory of the processes women use to meet the needs of the maternal infant dyad while self-managing OUD. The following research question was addressed:

In women who are self-managing OUD through medication assisted treatment (MAT), what processes are used to manage their pregnancy and early postpartum period to meet the needs of the mother-infant dyad?

### **Methods**

A constructivist grounded theory approach was utilized for this study (Charmaz, 2000). Participants were identified through purposive criterion and snowball sampling (Munhall, 2007). Inclusion criteria included: English-speaking; >18 years of age;  $\leq$  1 year after birth; self-identify as in recovery from substance use; and were using MAT during pregnancy.

Recruitment took place from July 2020 to July 2021 using in-person and online methods. A study flier containing a URL and QR code linked to an anonymous Qualtrics survey with a brief study description and screening questions was created. The flyer was

distributed and displayed by local community organizations in a mid-sized metropolitan area. Online recruiting began when the Covid-19 pandemic ended in-person research contact. Administrators of parenting and recovery Facebook groups, as well as other online parenting or recovery groups were contacted asking if they would publicize the study and share the recruitment flyer with their online community members. A Facebook Ad campaign was developed following protocols identified by Jones et al. (2017) and Wozney et al. (2019). Additionally, a Twitter account was created, and the study flier tweeted using strategic hashtags. When COVID-19 restrictions lifted, face-to-face recruitment at local MAT clinics resumed.

Interested individuals meeting criteria according to their answers on the Qualtrics survey were sent to a second questionnaire which collected a participant-chosen pseudonym, email address that did not contain their name, and a phone number where they felt comfortable being contacted. Participants were then emailed by the PI to schedule an interview. Prior to each interview, eligibility criteria were reviewed and confirmed.

Rich data and thick descriptions were collected through semi-structured, individual audio interviews conducted via a secure online conferencing platform operated by the PI's university (Charmaz, 2000; Charmaz, 2014; Munhall, 2007). The interview guide contained general, open-ended questions beginning with "tell me about your recent pregnancy and birthing experience," followed with more focused questions to prompt as needed (Charmaz, 2014). The interview guide was adjusted during later stages of data analysis in response to themes identified (Charmaz, 2014). To continually check personal biases, memo writing was used throughout the data collection and analysis process (Birks



& Mills, 2015). Memo writing allowed for examination of the data while recording how the researcher thought about the data; ensuring analysis was tied closely to reality as perceived by participants as categories emerged (Charmaz, 2000).

Data collection and data analysis occurred concurrently (Charmaz, 2000). The data collection and analysis process took place beginning in November 2020 and continued until theoretical and meaning saturation had occurred by July 2021 (Patton, 2002; Young & Casey, 2019). Demographic data was collected at the end of each interview. Interviews were audio recorded and auto transcribed using a secure conferencing platform operated by the PI's university, verified for accuracy by the PI, and uploaded into NVivo v. 12.6 for data analysis (QRS International Pty Ltd, 2018).

The study was approved by the institutional review board at the PI's academic institution. All participants gave recorded verbal informed consent after the PI read the consent form to them before the interview. Pseudonyms were used throughout, and no identifying information was collected at any time. Participants contact information was kept separate from interview data. A Certificate of Confidentiality from the National Institutes of Health was obtained.

Data analysis began with initial coding using a line-by-line coding approach focused on actions (Charmaz, 2000). Line-by-line coding continued until the emerging categories were identified. Beginning with the analysis of the second transcription, constant comparison of data within, across, and between interview transcripts was used (Charmaz, 2000). This entailed (a) comparing different views or actions between two or more participants, (b) comparing across time from the same participant, (c) comparing

one situation with another, (d) comparing data with the groups of codes (categories) and comparing one category to one or more different categories.

During focused coding, initial codes were grouped into categories to explain patterns within the data (Birks & Mills, 2015). Sub-categories were identified, and constant comparison was used to shift focus toward interpretation of the dimensions of each category. The initial and focused codes comprised the developing theory (Charmaz, 2000). From this point, the early tenets of the theory were identified by the team (Charmaz, 2000). Strategies such as diagraming, as suggested by Strauss and Corbin (1994), were used to further the understanding of codes.

Evaluation of the study methods and processes occurred via monitoring credibility, resonance, usefulness, and originality (Charmaz, 2014). Credibility was demonstrated through rich interviews gathered from a diverse group of women. The use of constant comparative methods allowed for a systematic approach to data analysis, and the use of direct quotes support that the categories and themes are grounded in the data. Building in questions to later interviews specific to emerging categories and themes allowed for validation that thematic interpretation of data aligned with participant perspectives. To address the criteria of resonance, the researcher uncovered and explored assumptions to fully explore the phenomenon. Finally, to address the criteria of usefulness and originality, the researcher aimed to create a theory that can inform future self-management support for the mother-infant dyads by healthcare professionals.

## Results

### Descriptive Statistics/Participant Characteristics

The recruitment link yielded 80 inquiries with 44 of the individuals meeting inclusion criteria. The final analysis included 16 in-depth interviews. Figure 1 depicts how the final 16 participants were identified. Table 1 provides a description of participant characteristics.

### Theoretical Concepts

The analysis identified 6 main processes that women in recovery simultaneously engage in during pregnancy and the postpartum period to meet the needs of the mother-infant dyad. Each process is shaped by 3 dimensions that emerged: prior experience with motherhood, freshness in recovery, and stigma. The 3 dimensions and supporting data are presented in Table 2.

### Processes

#### *Maintaining Vigilance*

Maintaining Vigilance refers to the internal work women did to surveil the status of their recovery and to monitor the baby's development. Women fresh in their recovery were engaged in early steps around learning common relapse triggers and working to self-monitor signs that they were at risk for relapse.

I just became more aware of triggers... I don't know if you've heard of HALT, which is hungry, angry, tired, and lonely. I did become more aware of trying to avoid any of those things because it can become triggers. (P9)

Mothers who felt they were more stable in recovery had developed an automatic set of ways they were able to maintain vigilance for their relapse risk signs. Some mothers sought out jobs working with individuals in recovery because their work of

monitoring others kept them engaged in self-monitoring. Women reflected on their previous addiction-impacted life to identify individual specific self-monitoring tools for maintaining vigilance. Additionally, being able to reflect on the significant changes that have taken place in their lives since starting MAT compared to when they were not utilizing MAT was a motivating factor to continue the work of recovery.

Then I look at her [her baby] and I'd be like, I can't do that because once I use once, there's like...it's just, it's all over again like it's gonna take a lot to get me back to taking my medication and not continuing to use heroin. So that was knowing my past and knowing how I am with drugs. (P4)

Maintaining vigilance over baby involved mothers watching for signs of NAS in the immediate newborn period and monitoring for a normal developmental course throughout the infant year. Mothers described watching for signs of withdrawal in their baby and observing nurses assessing their baby's NAS signs. Mothers were critical of nurses at times for how the assessments were conducted.

When I gave [birth to] my first child, when they were using the Finnegan score and then come in and score every four hours. Some nurses were great. They you know he would be sleeping. And they would be real gentle, it wouldn't aggravate him too much before trying to score him and I had one nurse that came in there and she picked him up and took all of his clothes off and she just got him really aggravated and then scored him and of course, he scored higher. (P9)

Mothers that were more stable in recovery were more prepared to advocate for the type of cares they preferred from nurses to manage their baby's NAS.

After discharge, maternal vigilance shifted to watching for developmental milestones from baby, such as first smile or sitting up on own. When their baby reached milestones in the expected time range, they felt certain that they were meeting their child's needs and expressed a sense of relief.

Now she coos... And also when she's on the rocker she's able to play with toys she's able to hold. Like just items that really stands out because it marks on

milestones for babies...so it feels like you're doing a good job at the end of the day. (P3)

### ***Performing Self Cares***

Women performed self cares to meet the daily physical, emotional, and spiritual wellbeing of the dyad. Examples of self-care identified were healthy eating, exercising, securing childcare for a needed break, surrounding oneself with supportive people, praying, and arts and crafts. The women communicated that self-care was foundational to both mothering and recovery.

That self-care piece though is huge for me because I can't be a good mom when I'm not taking care of myself...and that goes for like the opiate part or just in general. (P4)

I need to figure out something at some point in the day where I can kind of just like take care of myself, because if I stop taking care of myself, I can't take care of the baby. I can't take care of anyone. (P7)

Women who were fresh in recovery were engaged in self-care learning, still figuring out which techniques worked well for them. In contrast, those more stable in recovery had already identified self-care methods that worked well for them and had built a schedule with routine time for self-care.

### ***Putting in the Work of Recovery***

Putting in the Work of Recovery is comprised of learning and managing all aspects of the individual's recovery program. Because women in this study all utilized MAT in their recovery management, these women must navigate the requirements to strictly adhere to the procedures set by their MAT clinic. This adds a time commitment for all required appointments, including group therapy, individual counseling, and scheduled and unannounced drug testing. Balancing all these responsibilities with work or childcare made it challenging to meet the requirements of MAT.

At first, it's once a week they check on you, they give you a weeks' worth of medicine at a time... Then like say you do it every two weeks and they give you 2 weeks' worth of medicine and then you'll go to once a month. But you still have to... do your 2 meetings a month... Luckily, I wasn't working at the time... If I was working, there's no way I could've been went into the program. There's just no way. (P12)

Basically, the hardest part was just having to get up and go to the clinic every single day. I go six days a week, and then I get to take home for Sunday. It is a 1/2-hour drive just to get there, so I spend an hour everyday driving. (P1)

Women who considered themselves fresh in recovery required more focus to ensure they met all the required steps of the MAT program, constantly making sure they did not forget a requirement. In comparison, women who were more stable in recovery had constructed their own systems to manage the steps of MAT and spent less mental energy organizing their time.

And like I still go in weekly and take drug screens, but that's not too bad, like usually, he [son] goes to grandma's when I do that... like I just run in, take a drug screen, and come back out. I'm not in there long at all. (P5)

### ***Advocating***

Advocacy served the dual purpose of building a sense of personal maternal empowerment and communicating to providers that they were capable, prepared mothers. Because women had done the work of preparing to self-manage OUD and parenting, they wanted to be involved in the care decisions made about them and their babies. Women discussed advocating for themselves when it came to pain management in labor and postpartum, and also to be included in discussions about baby's cares, timing of procedures for their baby (e.g. nasogastric tube insertions or circumcisions), and NAS treatment plans.

I did find out the hospital like they don't really talk to you about what the baby is scoring and how they handle things unless you're asking... Like I had to ask the

questions and make sure they knew that I knew kind of what I was talking about to clue me in because they really don't you know, the first time they didn't even share that with me much. (P5)

Mothers who identified as fresh in recovery demonstrated less advocacy for self and baby and were more likely to follow advice given by others. Those identifying as more stable in recovery demonstrated greater ability to advocate for self and baby. One mother describes her advocacy for her planned pain management to hospital staff:

Please do not offer me any narcotic pain medication. I told them in the beginning too. I was like don't offer me any a narcotic pain medication. I'll be fine like as long as I have the epidural I will be fine. (P7)

Women who were stable in recovery, and those who'd done knowledge preparation before hospitalization expected a more active involvement as a member of the care team. Women who were stable in recovery also became an advocacy role model in their communities. Some women took their advocacy to the legislative space to work toward less state-to-state variance in MAT programs for mothers. After researching MAT clinic protocols and policies in her state, one mother stated, "so they [MAT clinics] all had these different protocols throughout the state...and I called the state like, you know, just to file a complaint because it's ridiculous" (P15).

Advocacy was intricately tied to stigma from healthcare providers—women felt their drive for advocacy was initiated when nurses or providers were judgmental of the use of MAT to manage recovery through pregnancy. When women experienced stigma during health care, they felt that they could not trust their providers. In response, many became engaged in care management to prove to others that they are knowledgeable, good mothers.

### *Navigating Social Support*

Navigating social support is defined as the way women access and align sources of instrumental and emotional support with their varied needs. Women identified their various support needs, determined who in their social circle was best to meet those support needs, and assigned appropriate needs to the person deemed best. Instrumental support included access to resources like food and housing, help with transportation, and childcare. Emotional support for mothering included birth planning, encouragement to succeed in recovery, and recognition of steps towards becoming a mother. This was most often assigned to family or non-recovery friends. Emotional support also comprised of talking with people who understand the experience of recovery who can guide women through cravings and having individuals around that were going through the same thing as them.

my elder sister, she was there to make sure I attend all the meetings with my daughter because I'm sometimes too tired to go and my mom was maybe not around. Yeah, I can say maybe sometimes I was stubborn. So she played the role of my mom most of the time. (P2)

I've had that encouragement and support kind of like not enabling, but just they always, they always believed that I was gonna get sober, so that was kind of, you know, I think I was set up a little better. (P8)

Women utilized support from therapists and counselors when family or friends were not capable of meeting support needs, including management of cravings or working through stigmatizing encounters. "So, when I have issues that I feel so silly to share with my mom, I talk with my therapist. And when you come back home, I feel like relieved I talked to someone" (P2). One woman explained how it took talking with her therapist to overcome a negative experience where she felt stigmatized and not believed by hospital



personnel when a drug screen had been performed on her and her baby without her understanding and consent.

And I went to my therapist, and we talked and he told me it's normal, they were just doing their job...yeah, so I think I understood from my therapist side and I got over it. (P2)

Women with questions about the day-to-day management of recovery or for recovery-specific issues during pregnancy, birth, and postpartum found women from group therapy or online social media groups for moms using MAT. Interactions with these peer supports gave women role models and hope that they would be successful:

I'm not I'm not going to be a terrible mom because yeah, this person isn't. And then she's a mom already. (P2)

Women that were fresh in recovery were learning the skill of identifying needed support and assigning different sources of support to the best people in their network, while those more stable in their recovery had established tailored support systems and were able to act as mentors to the women who were less stable. One mother who had been in recovery for years and who had experienced a recent relapse, described the way she immediately re-activated her previous support system to self-manage her recovery needs.

[I] immediately got back into outpatient treatment back home, which I've been in before, back with that doctor, made him aware that I was expecting. He was familiar with me...I also went to groups twice a week again and went down to once a week and graduated out of there again. ...I have a sponsor and I attend four AA meetings online a week. I speak with a sponsor daily...I also have a therapist outside of my outpatient that I also speak with once a month. (P14)

Stigma within the recovery community complicated this alignment of needs and potential social supports because abstinence-based recovery communities often view a person using MAT as not sober. When women found that they were judged by other

members in the recovery community for choosing MAT as their recovery modality, they could not rely on those support systems they had in place previously. “I do not go to AA anymore and NA is it’s the same thing. They don’t think of medication assisted treatment as being clean” (P7).

### ***Acquiring New Skills and Knowledge***

Mothers dedicated themselves to an engaged motherhood, including learning about MAT’s potential impacts on their baby. Women sought out varied sources of information, including internet searches, social media, family and friends, and providers. Some mothers called the hospital prior to delivery to find out what protocols and policies they had in place for babies with Neonatal Abstinence Syndrome (NAS). Researching different assessments for NAS allowed mothers to feel prepared for what to expect after birth.

You know, I looked into the scoring charts on my own. Kind of called the hospital ahead of time and ask them how they dealt with babies that was, you know, born to mothers on it. (P5)

One way that providers supported women’s work was to provide vetted information, including research studies or practice guidelines that women could review.

My OB has given me some things to read...I’ve looked at several studies online. Um, showing the you know like the dosage that the mother is on does not really correlate with the severity of NAS symptoms, but other things do like smoking. Uh, using other substances, illegal drugs, things like that. (P9)

Education continued during the birth hospitalization. The baby’s NAS monitoring required an extended stay of 3-5 days. Many mothers reported this extra time allowed them to learn more about non-recovery self-and baby cares so they would feel more prepared going home.

Mothers that were fresh in recovery more often described looking to others for advice on finding resources to help them prepare for childbirth and being a mother. Individuals more stable in recovery spoke of doing more individual research and sharing their knowledge with other moms. First time mothers focused much of their attention on learning newborn cares and utilizing the extended hospitalization to feel prepared for discharge. In comparison, mothers with prior pregnancies spent less time on normal newborn cares and discussed the ways in which parenting another child was different.

### **Pregnancy and Early Parenting in Recovery: A Situation Specific Self-Management Theory**

Pregnancy and Early Parenting in Recovery is a situation specific self-management theory depicting the processes mothers on MAT for opioid recovery use to meet the needs of the maternal-infant dyad. The six processes helped women negotiate two concurrent and sometimes contradictory identities of Mother and Person in Recovery. Women engaged in all six processes during their pregnancy and early parenting experience. Each process is shaped by the two personal modifying factors of having prior experience as a mother and freshness in recovery. Additionally, the dimension of stigma impacted women's perceptions and behaviors of self-management during pregnancy and recovery, regardless of the personal modifying factors.

Assumptions of the theory include: (a) the recognition of addiction as a chronic illness, (b) the recognition of recovery as a continual process responsive to self-management behaviors, (c) mothers choose to use MAT as their recovery modality for OUD, and (d) mothers desire to have active involvement and shared decision making regarding their self-management and their baby's care throughout pregnancy and early

parenting. Encouraging or enhancing a mother's engagement in each process supports the self-management of the dyad.

### **Discussion**

This situation specific theory reflects the ways women in recovery from OUD actively engage in meeting the needs of the dyad. While elements of this situation specific theory align to current knowledge regarding recovery—particularly harm reduction approaches to recovery and recovery as a chronic illness—this study offers important new insights to providers who care for women on MAT. It was clear from the women in this study that many obstetrical providers and inpatient nurses were both lacking in knowledge and judgmental of women to care for themselves and their babies. The presentation of maternal addiction and recovery from a strengths-based, self-management perspective should cause a shift in care management.,

SAMHSA (2012) defines recovery as, “a process of change through which individuals improve their health and wellness, live a self-directed life, and strive to reach their full potential” (p. 3). Similarly, a consensus panel for the Betty Ford Institute, defined recovery as “a voluntarily maintained lifestyle comprised of sobriety, personal health, and citizenship” (Betty Ford Institute Consensus Panel, 2007, p 222). The goals identified by mothers in the current study were to have a healthy mom, healthy baby, and to be a good mother. In addition to avoiding relapses, mothers were on their individual dyad's journey of growth and development.

### **Limitations**

This study focused only on individuals utilizing MAT for recovery management. Therefore, the processes identified by these mothers may differ than the processes

utilized by mothers utilizing a different recovery approach. Additionally, we should be careful not to assume that these processes apply to those following another path in recovery or actively in addiction. Due to timing of the study and Covid-19, the recruitment plan was adjusted twice, possibly impacting heterogeneity of the group.

### **Implications for Practice**

Use of this theory will allow healthcare providers to recognize the many ways mothers are putting in the work of recovery and preparation for motherhood. Healthcare providers can use this knowledge to guide development and implementation of support services that recognize the active engagement of women. Partnering with engaged women managing their mothering and recovery needs will likely reduce healthcare stigma experienced by women.

Additionally, this population of mothers and children require an innovative approach to care to maximize strengths and minimize harm. Management of recovery through pregnancy and early parenting might best be served by protocols developed by a combination of expertise, with representation from obstetrical, addiction, and pediatric providers. The theory that emerged from this study has the potential to guide this interdisciplinary work to meet the needs of this important population.

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**Table 1***Participant Characteristics*

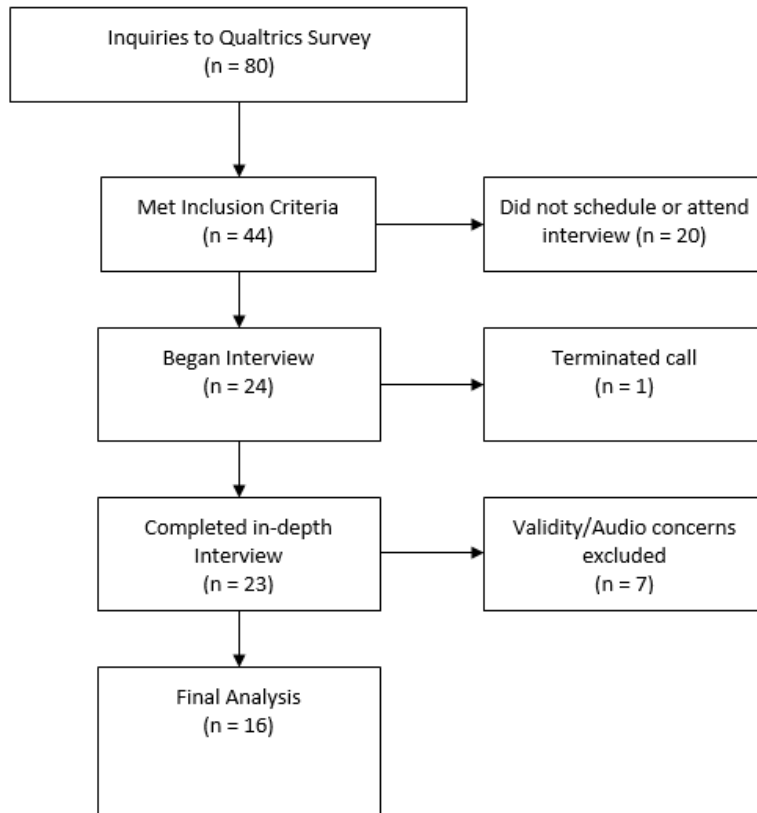
Participant ID	Pregnancy <sup>a</sup>	Months Postpartum	Highest Education Level <sup>b</sup>	Racial Ethnic Id <sup>c</sup>	MAT prior to Pregnancy
1	2	-	-	-	Y
2	1	7	C	B	N
3	2	5	C	B	N
4	2	1	PC	W	Y
5	3	1.5	PC	W	Y
6	1	6	C	H/B/W	N
7	1	6.5	PC	W	Y
8	3	5	PC	W	Y
9	2	5	PC	W	Y
10	3	1	C	W	Y
11	2	2	G	W	Y
12	2	3	AD	W	N
13	1	4	PC	H/W	N
14	4	6	AD	W	Y
15	2	1.5	AD	H/W	Y
16	1	0.75	PC	W	Y

*Note.* Missing data is indicated by a dash.

<sup>a</sup> Pregnancy indicates which child this was for the participant. <sup>b</sup> Level of education (PH-partial high school; HS-high school; G-GED; PC-partial college; AD-associates degree, C-college, GD-graduate degree). <sup>c</sup> Racial or Ethnic Identity (W-White, H-Hispanic, B - African American or Black).

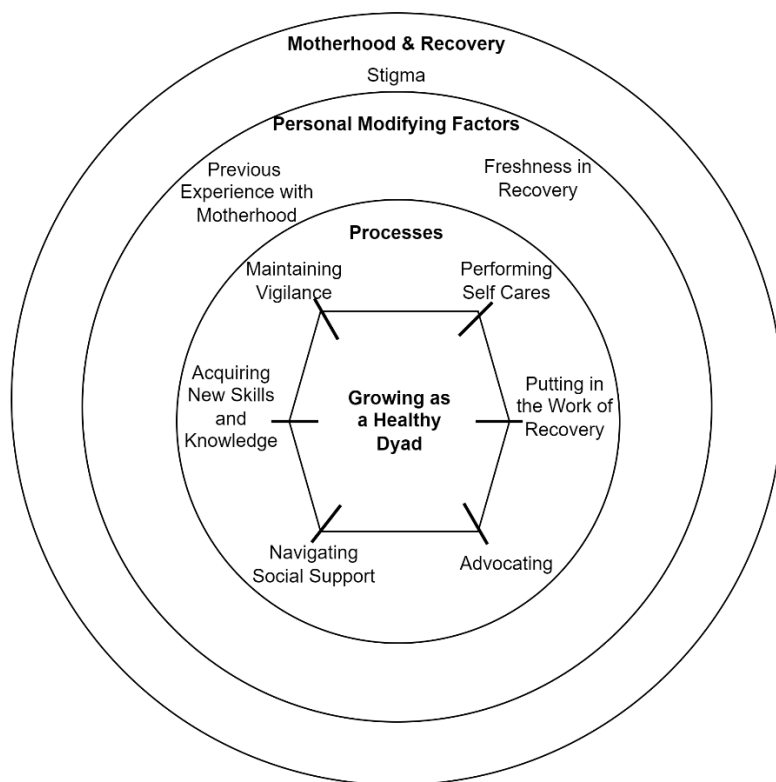
**Table 2***Theoretical Dimensions*

Dimension and Definition	Characteristics	Example Quote
Previous Experience with Motherhood Having previous experience with pregnancy and motherhood.	First Time Mothers: Focus on learning infant cares Adjusting to life with a newborn Prior experience as a mother: Adapting to growing family	“They taught me how to swaddle...I went into this blindly. I had no clue.” (P7)  “I’m still trying to settle into a routine. You know, it’s very different with two [kids].” (P15)
Freshness in Recovery Perception of their likelihood to relapse and length of time in recovery.	Women Fresh in Recovery: High concern for relapse Interacting or ending relationships with others who use addictive substances Acclimating to the MAT process Women More Stable in Recovery: Not interacting with others who continue to use Skilled in managing MAT process Mentorship of others in recovery	“I think because I was newly clean and sober, I didn’t fully cutoff people that I used to use and drink with.” (P6)  “I didn’t have the thoughts of, you know, am I going to get high and stop taking [MAT]. It was just, wasn’t even a thought and it’s been a lot easier.” (P4)
Stigma Feeling judgment or “othering” from individuals.	Actual    Anticipated	“When I was disclosing my condition of opioid use, the nurses were very, very unfriendly...I felt like they did not understand me.” (P3)    “I’ve heard horror stories...where [women] literally have been treated horribly because they are on either methadone or buprenorphine, or some sort of maintenance medication, and they the nurses treat them horribly.” (P7)

**Figure 1***Final Sample Recruitment and Inclusion Flow Chart*

**Figure 2**

*Pregnancy and Early Parenting in Recovery: A Situation Specific Self-Management Theory*



## Appendix H: Results Manuscript 2

### Engagement in Online Communities by Mothers in Recovery

#### Abstract

**Purpose and Background/Significance:** Maternal opioid use disorder (OUD) during pregnancy and postpartum has significant impact on the mother-infant dyad. Pregnant women impacted by OUD rely on social, emotional, material, and informational support to maintain recovery and prepare for motherhood. Engagement in online communities is common by individuals with OUD, yet the ways mothers managing OUD recovery with medication-assisted treatment (MAT) find support in these spaces is not well understood. The purpose was to examine the role engagement with online communities play in pregnancy, postpartum, and early parenting experience for women managing OUD recovery with MAT.

**Theoretical/ conceptual framework:** The harm reduction model is a pragmatic and compassionate way to minimize harm and harmful consequences of addictive behaviors and is the approach embraced in the care of pregnant women with OUD. This study is rooted in the harm reduction model and principles of recovery, specifically, being person-centered and building a community of support.

**Method:** A narrative analysis was utilized. Ten participants were identified through theoretical sampling as part of a larger grounded theory study about ways women using MAT for recovery from OUD meet the needs of their mother-infant dyad. Individual, semi-structured interviews were conducted. Inclusion criteria included: English-speaking, 18 years of age or older, live in the United States, within the first year after birth, using MAT to manage OUD, and identified engaging with online communities during pregnancy and/or postpartum.

**Results:** Three narratives that emerged from the analysis included: (1) *belonging*: online communities were spaces of acceptance, support, vulnerability, and connection to others in recovery; (2) *collaboration*: the reciprocal practice of sharing and receiving support; and (3) *expecting success*: surrounding oneself with positive individuals who believed successful mothering in recovery was possible.

**Conclusions:** Engagement in online communities can be a meaningful adjunct or replacement for in-person support. Online support spaces are available 24/7 and allow people to find a community that fits their exact needs. Healthcare providers could extend their care for mothers in OUD by referring them to online communities for support of recovery self-management efforts in a way women cannot get in general mothering support groups.

### **Engagement in Online Communities by Mothers in Recovery**

According to the National Survey on Drug Use and Health (NSDUH), in 2019, an estimated 10.1 million people aged 12 or greater misused opioids in the past year (Substance Abuse and Mental Health Services Administration [SAMHSA], 2020). On average, approximately 21,000 pregnant women between the ages of 15 and 44 indicated misusing opioids in the past month in the United States (Smith & Lipari, 2017).

Medication-assisted treatment (MAT) using a prescribed long-acting opioid agonist, in combination with behavioral therapy is the current recommended management of opioid use disorder during pregnancy (American College of Obstetrics and Gynecology [ACOG], 2017; Klamman et al., 2017; Martin et al., 2019; Reising et al., 2019; Rizk et al., 2019).

Pregnant women impacted by OUD rely on multiple forms of support including social, emotional, material, informational, and recovery (Asta et al., 2021). During pregnancy, an individual's social network impacts the forms of support they receive (Asta et al., 2021). Social support that matches the needs of the pregnant woman can lead to a number of positive outcomes, including helping women to manage the internalized stigma associated with OUD (Birtel et al., 2017). Increases in social networking with individuals who are not using illicit substances can lead to a decrease in substance use during pregnancy (Asta et al., 2021).

The American Society of Addiction Medicine (ASAM) recognizes addiction as a chronic illness that can be managed with the same prevention and treatment efforts utilized by individuals with other chronic illnesses (American Society of Addiction Medicine [ASAM], 2019) and recovery as an individualized process focusing on

improved health and wellness (SAMHSA, 2012). For individuals with chronic illness, online peer support has led to positive outcomes like patient empowerment, identity development, receipt and provision of support, information sharing, and the sense of a collective voice (Barak et al., 2008; Kingod et al., 2017). For individuals with opioid use disorder, engagement with online peer groups is common in individuals actively using, those self-managing their recovery, and those in treatment (D'Agostino et al., 2017). One study identified a significant portion of the pregnant women with opioid use disorder who were engaging in online health communities were self-managing their recovery without the use of professional treatment (Liang, et al., 2021). No studies have been identified by the author that have looked specifically at engagement in online communities by pregnant women in recovery from opioid use disorder who are using medication assisted treatment as their recovery modality.

### **Purpose**

The purpose of this study was to examine the ways women who are in recovery from opioid use disorder during pregnancy and the early postpartum period engaged with online communities. The following research question was addressed through a qualitative, narrative approach.

For women who are managing OUD recovery with medication-assisted treatment (MAT), what role did engagement with online communities play in their pregnancy, postpartum and early parenting experience?

## Study Design and Methods

### Sample

Participants were identified through a combination of purposive, criterion, and snowball sampling approaches (Munhall, 2007) as part of a larger grounded theory study, results of which are published elsewhere (Mattson & Ohlendorf, in preparation).

Inclusion criteria included: English-speaking; 18 years of age or older; live in the United States; and are within the first year after birth who, self-identify as using MAT to manage their OUD through the course of their pregnancy, and identified using online resources for social support. Individuals identified as actively using illicit substances were excluded. Inclusion criteria were based on current definitions of recovery and guidelines for treatment of opioid use disorder in pregnancy (ACOG, 2017; ASAM, 2019; SAMHSA, 2012).

Recruitment took place from July 2020 to July 2021. Participants were recruited through a combination of referral by staff in local Medication Assisted Treatment facilities in a moderately-sized midwestern city and also via engagement with the leaders of private, online social media groups for mothers in recovery who shared the study information with their membership.

The sample of participants represented mothers who utilize either methadone or buprenorphine to manage recovery. Some women had been using MAT for a period of time to manage recovery prior to their pregnancy while others began MAT during the pregnancy related to this interview. Women in the sample had a variety of motherhood experience, with both primiparous and multiparous women represented. A total of 10



individuals discussed use of online support groups, and their narratives were included in this analysis. See demographic characteristics of the sample in Table 1.

### **Interviews**

Each woman participated in an individual, semi-structured audio interview, conducted via a secure online conferencing platform operated by the PI's university (Kim, 2016). To maintain participant anonymity, cameras were not on during the interviews. The interview guide began with broad, open-ended questions, "tell me about your recent pregnancy and birthing experience" and "tell me about the people that were around during your pregnancy and after birth." More focused questions were used as prompts when needed (Charmaz, 2014). Interviews were audio recorded and auto transcribed inside the university's conferencing software. The PI verified the transcribed interviews for accuracy and uploaded the transcribed files into NVivo v.12.6 for coding and analysis. Interviews continued in an iterative fashion. Each transcript was coded shortly after the interview so that the PI could determine when sufficient saturation of major categories of the grounded theory study had occurred.

### **Ethical Considerations**

The study was approved by the institutional review board at the academic institution with which the PI is affiliated. All participants gave recorded verbal informed consent agreeing to be interviewed after reviewing the consent form with the PI before the interview. All participants provided a pseudonym for the interview and no identifying information was collected at any time. All participant contact information was kept separate from interview data. A Certificate of Confidentiality from the National Institutes of Health was obtained for the study.

## **Data Analysis**

Interviews were analyzed from 10 participants who identified that online support was a key part of managing the needs of their recovery and their pregnancy and early mothering. Analysis began with initial coding in which the PI read the transcripts line-by-line and focused on ways women told stories of support they received from online communities (Charmaz, 2000). Line-by-line coding while paying attention to meaning encouraged the PI to stay immersed in the data without imposing or forcing personal assumptions, allowing for a focus on both content and context conveyed by the interviewees (Charmaz, 2000; Poirier & Ayres, 1997). Line-by-line coding continued until the PI identified the emerging narrative themes.

In alignment with narrative inquiry, attention was paid to the individuals who were identified during the telling, meaning that participants gave, and the selection of details that were provided regarding use of online support groups (Poirier & Ayres, 1997). An iterative process was used for within-case and across-case analysis (Ayres et al., 2003). This process of comparison of data entailed (a) comparing different views, experiences, or actions between two or more narratives, (b) comparing across time within the same narrative, (c) comparing one situation with another situation, and (d) comparing one category to one or more different categories (Ayres et al., 2003; Charmaz, 2000). During the iterative process, the research team continued to ask questions of the data and the early concepts that were developing (Birks & Mills, 2015). Additionally, attention was paid to narrative inconsistencies, repetitions, or periods of silence, that could hint at times when the participant was uncertain, had confusion, or was dealing with conflicting emotions (Poirier & Ayres, 1997).

## **Results**

The mothers who identified the use of online social support ranged in ages from 24 to 37 years of age and all women reported some amount of college education. The group included both mothers who had been using MAT before their pregnancy and those that started on MAT during the pregnancy. Mothers using both methadone and buprenorphine were represented in the group.

Three main narratives emerged from the analysis. These narratives are presented here as the stories told of engagement in online communities in the context of the women's larger story of their prenatal, birthing, and postpartum experience as a mother utilizing MAT. The first story that was told by the majority of participants, was a story of belonging. This story highlighted the importance of acceptance, support, a place to be vulnerable, and a way of staying connected with others in recovery. The second story was a story of collaboration. This story highlighted the reciprocal act of sharing and receiving knowledge through their engagement. The third story was a story of expecting success.

### **Story of Belonging**

The story of belonging demonstrated the importance of finding a community of women with a shared experience. For these women, specific shared experiences included being a parent or being on MAT while pregnant or parenting. The women told stories of having had challenges finding an in-person group with shared experiences due to transportation or distance. Face to face meetings or groups through their MAT clinic often had only a small number of participants and most women lived in areas where they did not know many other mothers on MAT.

When women found that there were large numbers of women who shared the experience of mothering while using MAT for recovery in online social media groups, they felt it ameliorated the “othering” experience or stigma that they felt in many settings. Women who spoke of connecting with other mothers at a similar pregnancy gestation felt that they were going ‘through the same thing at the same time’ (P23). These online shared connections led to connecting over the phone and in person with women found to be geographically close. Because women were able to find other mothers who had managed pregnancy and parenting while in recovery, they felt a level of understanding that family and friends could not give. Having a large group of people with a shared experience made women comfortable asking questions to the group that they did not want to ask family or friends where they may experience feeling outside of the motherhood norm. The ability to ask questions at any time of day added to the approachability of the group.

It was common for women to have to check out one or more groups before they found one where they felt this sense of belonging. Certain online groups stigmatized women because of their choice to utilize MAT for their recovery and women saw this ‘debate about...medication assisted therapy and the difference between being addicted and being like dependent’ (P5). Having a place to talk openly about their use of MAT for recovery was important because many women will choose not to disclose their use of MAT to all individuals in their life. One participant expressed the importance of belonging when she stated,

That’s why these groups are so important. And I mean on Facebook, because it shows these women that they’re not alone, that they, you know, you are not a failure because you’re on MAT medication and you’re having a child. And it’s hard for these women to see that. But they do, they do, eventually. (P9)

### **Story of Collaboration**

A second story that was told by the majority of participants was a story of collaboration. This story revealed that women found online communities to be a place they could share and receive knowledge and a sense of wisdom. The women shared that they could not rely solely on general parenting support groups for parenting support or information because they felt unwilling to share their recovery, but that the communities specifically aimed at mothers using MAT were a safe space to find key information and problem-solving issues of pregnancy and parenting.

Mothers were able to ask advice or seek consultation on topics including what to expect during pregnancy, birth, their postpartum period, and what to expect for their newborn. This knowledge helped to calm fears by being prepared about things like drug testing while in the hospital, involvement of Child Protective Services, pain management plans for labor and postpartum, and neonatal abstinence syndrome—all of which would not be discussed in a general parenting or pregnancy forum. The information gathered from the members of the Facebook groups were perceived as more meaningful and specific to the moms in the group than if they had just searched for information on their own online; feeling they received more honest information that fit their life context. One mother described a Facebook group as a “treasure trove of information, support, [and] experiences. While I was in the NICU [and] while I was pregnant, anything I needed to know I could find it there or find out where to get information” (P6). Another mother stated, “you’ll have moms in the group that will be like, hey this didn’t work for me, this did work for me and why” (P1).

Armed with the knowledge and skills they needed for in-hospital stays, mothers found the strength to advocate for themselves and their newborns. Women reported having made plans with online group members for postpartum pain management, and for having discussion with nurses regarding their preferred in-hospital assessment for neonatal abstinence syndrome (NAS).

Knowledge sharing among group members was more valuable to the women than other information sources because the knowledge was framed in personal experience. Seeing ways that other mothers handled situations, they could also develop a sense that they could plan to manage similar situations: “There’s moms having babies left and right on MAT and I just basically when based up what they did and I took their suggestions and I had a birth plan...and I advocated for myself” (P3). One mother identified that she made sure to stay consistent with her medication and dosing after hearing from another mother who had a negative birthing experience and had not always been consistent with her medication dosing.

While most women reported that finding commonalities was helpful in creating plans for self-management, others found that the collaborative sharing of experiences was a barrier to managing mothering and recovery. One example was shared by a woman who anticipated that her baby would not have any issues with NAS due to most group members sharing about how their child did not have serious signs of NAS, meaning that their babies did not have to go to the neonatal intensive care unit (NICU). However, this same mother found that, while the dominant voices in the group had not had babies with NAS who had to be managed in the NICU, she found connection with mothers whose babies had needed NICU care after she reached out during her postpartum period. Her

experience shaped the way she now approaches the groups and recommends that new members look for knowledge sharing from mothers who had a wide range of experiences and to “learn as much as they can, about everything...don’t just listen to [one experience], just in case, find out about the other [experiences]” (P6).

Another barrier to effective collaboration was described as women sharing their ‘horror stories’ with pregnant or postpartum mothers in the group. These horror stories had an effect of artificially heightening expecting mothers’ concerns about stigma they would experience in the hospital or during appointments with providers. When women did not experience the kinds of stigmatizing experiences described, they felt grateful, but the impact of expecting the stigma was harmful to their recovery and mothering.

### **Story of Expecting Success**

The third story that was told by participants was a story of expecting success. Members of the group were positive and uplifting about being a mother on MAT. Being able to see other mothers who were successful examples role modeled to newly pregnant mothers or mothers new to recovery to see that it is possible to be a good mother and to stay sober. This emphasis on success helped women to focus on of the possibility of staying sober and making correct decisions.

I would have a way harder time staying clean ... If I didn’t have people like expecting like, hey, you’re gonna stay clean, you’re gonna do the right thing, and you know, having those close relationships with people that are, you know, rooting you on. (P1)

Women stated that membership in these groups was a significant aspect of their success and management of their recovery. Women appreciated the support they received from the women online and reported not wanting to let them down. Women expressed

gratitude for finding online support groups and felt that they played an important role in their ability to manage their recovery during their pregnancy.

Additionally, women reported being able to go to the group during difficult times, such as a baby needing to go to the NICU, and having other women put the situation into perspective for them. Letting them know that “this feels like a big deal now, but it will all be behind you” (P6), helping to ground them while also “[being] there for me when I’m going through it cause they know what it’s like. Which my family can support me, but not in the same way” (P6).

### **Clinical Implications**

Women in recovery from opioid use disorder who use MAT during their pregnancy and the early postpartum period are actively engaged in the care of their maternal-infant dyad (Mattson et al., in review). Engagement by these mothers in online communities was identified as a source of support through finding a place of belonging, a place of knowledge sharing, and a place where success is expected. Similarly, D’Agostino et al. (2017) identified advice seeking and support seeking as two main requests made in the online Reddit community for individuals recovering from opioid use disorder. Further, 95 percent of the advice given in the online community aligned with valid therapeutic principles (D’Agostino et al., 2017). Knowing the importance of support systems, the ability to have a support system available 24/7 and specific to your personal situation, can be a meaningful adjunct or replacement for in-person support.

The group of women in this study were all members of a MAT program which included oversight by treatment providers. These findings may not be generalizable to individuals that have not started working with a recovery provider or those using a



different recovery modality. Additionally, this group of women had a relatively high level of education, with all of them attending some amount of college education. The findings may not be generalizable to those with differing levels of education.

When working with pregnant women or new parents in recovery, it is vital for nurses and providers to help identify tools to ensure success. Encouraging engagement in online communities will provide an avenue to meet support and self-management needs—both for recovery and for the tasks of general self-care and motherhood in a way they cannot get in general mothering support groups.

It was identified that this support could be very impactful for women who do not have close relationships with family or friends in real life, or when family or friends are impediments to managing their recovery. Even those women with strong family or friends in-person support may benefit if the family and friends have not personally dealt with addiction. Additionally, individuals living in areas with fewer MAT programs may benefit from the increased ability to connect with other mothers in similar situations. Increased understanding of the ways women engage in online communities can guide future development of additional support services. By highlighting the level of engagement mothers have and their focus on educating themselves during their pregnancy and postpartum period while hearing the narratives from women themselves may help to decrease the stigma associated with being on MAT during pregnancy.

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**Table 1***Characteristics of the Sample of 10 Participants*

Participant Characteristic	<i>n</i>
Age	
Minimum Reported Age	24
Maximum Reported Age	37
Race/Ethnicity	
Black	1
White	7
Hispanic/White	1
Hispanic/Black/White	1
Pregnancy History	
First Pregnancy	3
Second Pregnancy	3
Third Pregnancy	3
Fourth Pregnancy	1
Level of Education	
Partial College	5
Associates Degree	2
College Graduate	3
Time in Recovery on MAT	
Less than 1 year	2
1-5 years	6
Greater than 5 years	2
Sources of Support Identified	
Partner/Spouse	8
Family	10
Friends	6
Friend on Social Media	9
Community Programs	5