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# *Journal of Prenatal and Perinatal Psychology and Health* (*JOPPPAH*)

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journal.editor@birthpsychology.com

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Mariana Cerqueira, MD, CPM

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Jess Kimball, CLC, PMH-C
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# *Journal of Prenatal and Perinatal Psychology and Health*

**Volume 37, Number 3, Winter 2023**


## CONTENTS





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**JOURNAL OF PRENATAL AND PERINATAL PSYCHOLOGY AND HEALTH** publishes findings from the cutting edge of the rapidly growing science of prenatal and perinatal psychology and health. The journal, published quarterly from 1986 through 2023, and now triannually, is dedicated to the in-depth exploration of the dimensions of human reproduction and pregnancy and the mental and emotional development of the unborn and newborn child. It provides a forum for the many disciplines involved, such as psychology, psychiatry, midwifery, nursing, obstetrics, prenatal education, perinatology, pediatrics, law, and ethology. The journal also navigates the numerous ethical and legal dilemmas that are emerging as society reevaluates its attitudes toward adoption and abortion or strives to establish moral positions on high-tech obstetrics and third-party conception. The opinions expressed in articles are those of the authors and do not imply endorsements by APPPAH, the editorial team at *JOPPPAH*, or the printer, Allen Press, Inc.

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# Editorial

Welcome to the Winter 2023 Issue! I am excited to share new developments that will advance the trajectory of innovation, collaboration, and excellence for *JOPPPAH*. Dr. Kate Stahl-Kovell has moved on from her role as Editor-in-Chief. I am thankful for Dr. Stahl-Kovell's leadership, friendship, and support, and the journal staff wishes her nothing but the best as she dives into clinical work in postpartum mental healthcare and writing. While bittersweet, it is an honor to assume the role of Editor-in-Chief. I am committed to sharing the latest scientific advancements in prenatal and perinatal psychology and health while amplifying marginalized voices and upholding the foundational principles of *JOPPPAH*.

I am also thrilled to introduce our new Copy Editor and Associate Editor, Ekaterina Cupelin, PhD. Dr. Cupelin is a birth, postnatal, and bereavement doula, author, and researcher. She brings a wealth of experience and an infectious enthusiasm to our team. Additionally, we welcome three new members to our editorial board, Dr. Mary Newman, Dr. John Bonaduce, and Dr. Taylor Bryant, who all bring expertise from academic to clinical. We also have several new peer reviewers volunteering their time and knowledge to enhance the quality of the journal. Their contributions are pivotal in advancing our mission to establish *JOPPPAH* as a leading journal in the prenatal and perinatal sciences.

At the heart of our Winter 2023 issue is the question: "How do we, as researchers and clinicians, create policies, spaces, and opportunities for parents and their babies to thrive?" We lead with "An Examination of Psychosocial Processes Related to Quality of Life in Pregnancy" (2023) by Sauer et al. Their research sheds light on perinatal mental health's often misunderstood aspects, emphasizing psychological flexibility and self-compassion as potential protective factors. This study provides valuable insights regarding how we can enhance the support and care available to pregnant people.



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Next, we are grateful for our continued partnership with the Policy Center for Maternal Mental Health and their impactful work to close gaps in maternal healthcare. In "Maternal Suicide in the United States: Opportunities for Improved Data Collection and Health Care System Change," Herrick and Burkhard (2023) highlight the shift in recognizing maternal suicide as a major contributor to pregnancy-related deaths in the United States. The authors outline suicide's devasting impact and advocate for evidence-based strategies to drive positive changes in maternal healthcare.

In "Prematurity, Attachment, and Interpersonal Therapy: A Review," Cerqueira and Vozar (2023) underscore the significance of mental health interventions for families with premature babies, focusing on the impact of prematurity on attachment relationships. The authors advocate for targeted clinical interventions, particularly Interpersonal Therapy (IPT), to enhance healthy attachment patterns and alleviate NICU caregivers' stress.

Additionally, "Reducing the Maternal Mortality Rate in the United States Through the Midwives Model of Care" sheds light on a significant issue in modern healthcare. Kimball (2023) explains that the lack of in-depth prenatal visits and continued postpartum care, and the improper parental leave policies are some of the factors contributing to the high maternal mortality rate in the United States. Kimball advocates for the Midwives Model of Care, a client-centered approach effective in reducing maternal mortality rates.

The winter issue is also enriched by a collection of perspective articles. Among them, "The Positive Outcomes of the FreMo Approach" describes a promising approach at the FreMo Medical and Birth Centre in Nairobi, Kenya, empowering pregnant women to improve maternal and child well-being during the perinatal period. Osoro (2023) highlights the psychological factors affecting conception, pregnancy, labor, birth, and postpartum and the challenges faced by the community.

In "The Prenatal Origin of Myth, Religion, and Ritual," Bonaduce (2023) takes us on a captivating journey exploring the concept of Mythobiogenesis. The article explores the Biblical narrative of Noah, leading to the conclusion that Noah and his ark are nothing more, nor less, than a single fertilized cell floating toward implantation in the uterus. The article reflects on the idea of prenatal consciousness and the limited methods

by which we measure and assess the emotional universe that precedes birth. In another thought-provoking exploration, "Vladimir Putin as a Return of Dr. Jekyll and Mr. Hyde: A Psychohistorical Exploration on the Nature of Human Contradictoriness," Janus (2023) explores the dual nature of Vladimir Putin, drawing parallels with Dr. Jekyll and Mr. Hyde. The psychohistorical exploration underscores the profound influence of early childhood on individuals and societies, urging a focus on empathy, attachment, and trauma-informed care for a more peaceful world.

Finally, we feature a personal birth story titled "My Path to Healing: A Mother's Journey of Self-Discovery and Transformation." Natoli (2023) shares her transformative motherhood journey, detailing challenges from traumatic childbirth to strained relationships. She emphasizes the importance of recognizing maternal stories and urges practitioners to adopt a non-judgmental approach, highlighting the significance of asking, "What is it you need?"

This issue exemplifies the spirit of inquiry, compassion, and exploration that lies at the core of our journal. I extend my heartfelt gratitude to our authors, reviewers, and readers for their contributions and support of *JOPPPAH*. I invite you to immerse yourselves in the rich content of this winter issue, and I am confident that it will ignite new sparks of curiosity, inspire further research, and foster deeper dialogues in this evolving field.

Wishing you a season of warmth, introspection, and discovery as you explore the pages of *JOPPPAH*.

Christiana Rebelle, PhD
Editor-in-Chief

# An Examination of Psychosocial Processes Related to Quality of Life in Pregnancy

Emily Sauer, PsyD, Jennifer Block-Lerner, PhD, Donald R. Marks, PsyD, Keri Giordano, PsyD

Perinatal anxiety and potential protective processes are often poorly understood compared to other types of perinatal distress. The present study investigated the relationship between perinatal anxiety and quality of life or life satisfaction in a pregnant sample. Psychological flexibility and self-compassion were examined as moderators of these associations. COVID-19 and other external factors were examined on an exploratory basis. Results indicate significant correlations between perinatal anxiety and satisfaction with life, as well as psychological flexibility and perinatal anxiety; proposed interaction effects were not significant. This study may enhance understanding of these processes and contribute to the growing field of reproductive psychology.

*Keywords*: perinatal anxiety, self-compassion, psychological flexibility, quality of life, COVID-19, moderation analysis

The authors have no conflicts of interest to report. **Dr. Emily Sauer** studied clinical health and school psychology at Kean University. **Dr. Jennifer Block-Lerner**, **Dr. Donald R. Marks**, and **Dr. Keri Giordano** serve as associate professors and in administrative positions within Kean University's Combined School and Clinical Psychology Psy.D. program. The research areas of these authors include women's health psychology, self-compassion, mindfulness, birth to five population, parenting, acceptance and commitment therapy, and clinical health psychology. Correspondence concerning this article should be addressed to: Emily Sauer, PsyD, sauerem@kean.edu, (201) 961-4128



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Pregnancy is often regarded as a beautiful time in a person's life. Yet, one-fourth of pregnant women meet the criteria for a psychological disorder, with one-twelfth of those women experiencing it for the first time during that pregnancy (Marchesi et al., 2016; Vesga-López et al., 2008). Perinatal mood and anxiety disorders (PMADs) are not currently recognized as individual diagnostic classifications in the *Diagnostic and Statistical Manual of Mental Disorders–Fifth Edition* (*DSM-5-TR)* but are referred to as specifiers of depressive disorders like major depressive disorder with peripartum onset. This specifier applies to a mood episode where symptoms occur during pregnancy and in the first four weeks following childbirth (American Psychiatric Association, 2022). PMADs are not only lacking diagnostic recognition despite their unique features that stem beyond depression, but they are also poorly researched and understood overall. Accurate estimates of the prevalence of these disorders are also lacking. However, recent research has suggested that the prevalence of PMADs, as well as severe mental illness (SMI) during and after pregnancy, has significantly increased in the United States over the past decade (McKee et al., 2020).

## Psychological Conditions Observed in Pregnant and Postpartum Women

### Perinatal Depression, Baby Blues, and Postpartum Depression

Perinatal depression is one of the most common psychological conditions noted in pregnancy, with around one in every seven women being affected (Kendig et al., 2017). It is estimated that around 20% of perinatal women in the United States experience symptoms of depression (Goodman, 2019; O'Hara & Wisner, 2014). Some of the symptoms seen in individuals with perinatal depression (and postnatal depression) include low and depressed mood, feelings of inadequacy and hopelessness, fatigue or sleep disturbance, anhedonia, additional fears or anxieties, and possibly the development of suicidal or infanticidal thoughts in severe cases (Bass & Bauer, 2018; Goodman, 2019; McKelvey & Espelin, 2018). Another experience involving depressive features is postpartum blues (also referred to as baby blues), which are considered to be relatively common (estimated to impact anywhere between 30-75% of postpartum women) and appear

within the first few weeks of delivery, given the significant changes in hormones, sleep, stress, and overall lifestyle changes, and dissipate relatively soon in the postpartum period (Accortt & Wong, 2017; Putri & Putri, 2022). Less common but still relatively prevalent, postpartum depression is estimated to occur in 13% - 20% of postpartum women and involves depressive symptoms that do not resolve after a few weeks in the early postpartum period (Bass & Bauer, 2018).

## Anxiety in Pregnancy

Perinatal anxiety often involves uncontrollable worry related to pregnancy, birth, the infant's health, changes in the mother's body, and one's ability to parent (Ayers et al., 2015; Marchesi et al., 2016). Despite being common, with estimates suggesting anywhere from 4%–39% (Marchesi et al., 2016) and 15%–25% (Dennis et al., 2017) of pregnant women experiencing significant levels of anxiety, most women do not seek treatment for their symptoms (Accortt & Wong, 2017). Many women do not qualify for formal diagnoses such as generalized anxiety disorder, panic disorder, or obsessive-compulsive disorder, but perinatal anxiety still can involve significant emotional distress, which can negatively impact maternal behaviors (Accortt & Wong, 2017). Various risk factors are correlated with perinatal anxiety, including younger age, single marital status, lower maternal education, comorbid psychological conditions, poorer maternal physical health, and limited access to social support (Bödecs et al., 2013; Borri et al., 2008; Faisal-Cury & Menezes, 2007; Giardinelli et al., 2012; Ibanez et al., 2012; Leach et al., 2017). Some of the consequences of untreated perinatal anxiety include an increased likelihood of developing preterm birth, possible later development of postpartum depression, lower sense of self-confidence in the mother, and poorer adherence to medical guidance (Accortt & Wong, 2017; Bauer et al., 2016; Kendig et al., 2017). Similar to perinatal anxiety, perinatal OCD often involves anxious, intrusive thoughts about fear of accidentally harming the fetus or infant and is estimated to occur in up to 15% of pregnant women and women in the first six months postpartum (Fairbrother et al., 2021; Wenzel & Kleiman, 2015). In general, perinatal anxiety is examined less often in research in comparison to postpartum depression. Unfortunately, research on

postpartum depression is already limited, so the literature on perinatal anxiety appears to be especially lacking.

## Impact of Perinatal Mood and Anxiety Disorders

Despite how common perinatal mood and anxiety disorders are, it is estimated that up to 50% of women experiencing these problems are never identified, so true prevalence rates are likely much higher than what is documented in research (Accortt & Wong, 2017; Gjerdingen & Yawn, 2007). These women must be identified because there are numerous consequences associated with untreated perinatal mood and anxiety disorders, not only for the mother but also for the child, the partner, and the family. This includes physical repercussions such as adverse birth outcomes and complications like preterm birth and low birth weight, increased risk for preeclampsia, and intrauterine growth restriction (Accortt & Wong, 2017; Armstrong, 2007; Davalos et al., 2012; Grote et al., 2010; Qiu et al., 2009).

Untreated perinatal mood and anxiety disorders can also greatly impact a mother's various relationships due to possible lower motivation to bond with the child because of preoccupation with personal distress, difficulties with romantic partners, and increased hesitancy to reach out for social support (Muzik & Borovska, 2010; Paris et al., 2009). Some studies have even shown that untreated perinatal mood and anxiety disorders can be associated with long-term negative impacts on offspring, including poorer physical, mental, and emotional health at and after birth, later conduct problems, and an impact even on the overall quality of life in the next generation (Bauer et al., 2016).

It is also crucial to highlight the fact that suicide is now considered to be a leading cause of death in the maternal population, with 20% of postpartum deaths resulting from suicide (Kendig et al., 2017; Khalifeh et al., 2016; Lindahl et al., 2005). The unfortunate reality is that many of these disorders are stigmatized, which may contribute to women not seeking help or treatment, even though these psychological disorders can be mitigated with various types of pharmacological and therapeutic interventions (Accortt & Wong, 2017).

## Biopsychosocial Factors Related to Perinatal Distress

Research has highlighted various biopsychosocial factors that may influence the likelihood of developing perinatal mood and anxiety disorders, as well as general perinatal distress. Social support has been demonstrated to predict health-related quality of life (emotional, mental, and physical health satisfaction) in pregnant and postpartum women in that those with higher levels of social support also endorsed higher levels of health-related quality of life (Emmanuel et al., 2012). Lack of social support has also been correlated with a higher risk of developing significant anxiety throughout pregnancy (Giardinelli et al., 2012; Leach et al., 2017). Social support has also been shown to play a mediating role in the association between perinatal anxiety and life satisfaction in that social support may buffer the negative impact of perinatal anxiety on overall satisfaction with life (Yu et al., 2020).

Research has also emphasized the fact that previous psychiatric history is associated with an increased likelihood of developing perinatal mood and anxiety disorders (Leach et al., 2017; Tambelli et al., 2019). In particular, previous history of depression and anxiety has been correlated with higher levels of perinatal and postpartum distress (Tambelli et al., 2019). In addition to having a history of psychological distress, the experience of negative life events has been associated with a higher likelihood of experiencing perinatal anxiety and general distress (Tambelli et al., 2019). Some negative life experiences noted in the literature related to pregnancy include younger age and unexpected pregnancy, pregnancy-related complications, previous pregnancy losses, and poor general health (Leach et al., 2017; Tambelli et al., 2019; Vesga-López et al., 2008).

Even though there is literature that examines various factors that can contribute to the development of perinatal anxiety and related distress, the number of examined factors is somewhat limited. There also appears to be a dearth of research on protective factors identified in other areas of research on general anxiety and distress that ought to be examined more closely with the perinatal population. Some research has suggested that interventions like acceptance and commitment therapy (ACT, see Hayes et al., 2006) are effective psychological treatments for the pregnant population, yet there is a serious lack of research on the role of acceptance and related processes in this population (Bonacquisti et al., 2017; Waters et al., 2020). Research on

anxiety and distress more broadly has examined these processes that appear to protect individuals from experiencing severe psychological distress. Some of the processes highlighted in research that can be targeted in interventions like ACT are self-compassion and psychological flexibility.

## Protective Processes: Self-Compassion and Psychological Flexibility

The concepts of self-compassion and psychological flexibility have gained significant attention in research within clinical psychology, given that the processes can be directly targeted and promoted in various therapeutic interventions such as ACT (Hayes et al., 2006) and compassion-focused therapy (Gilbert, 2010). Self-compassion is referred to as the experience of embracing "one's own suffering, experiencing feelings of caring and kindness toward oneself, taking an understanding and non-judgmental attitude toward one's inadequacies and failures, and recognizing that one's own experience is part of the common human experience" (Neff, 2003, p. 224). The core processes of self-compassion include:

1. Self-kindness, which relates to the idea of being understanding, compassionate, warm, and gentle to one's failures or difficulties;
2. Common humanity, which refers to the fact that it is part of the human experience to fail and be faced with hardship;
3. Mindfulness, which is the ability to welcome all present moment experiences (those experienced as both positive and negative) without judgment (Muris et al., 2016; Neff, 2003). Research suggests that engaging in self-compassion may reduce anxiety levels through how one perceives and relates to levels of distress (Luo et al., 2019).

Psychological flexibility is "the ability to fully contact the present moment and the thoughts and feelings it contains without needless defense and, depending upon what the situation affords, persisting or changing in behavior in the pursuit of goals and values" (Hayes et al., 2006, p. 7). Psychological flexibility is often considered to be related to a person's ability to confront, cope with, and tolerate psychological distress, and it is correlated with lower levels of anxiety and other forms of psychopathology (Berryhill et al., 2018; Kashdan & Rottenberg, 2010; Masuda & Tully, 2012; Panayiotou et al., 2014). Masuda and Tully (2012) suggest that this inverse correlation comes about through the willingness to experience distressing

private events rather than fight them, an important aspect of psychological flexibility.

Both psychological flexibility and self-compassion are processes that appear to assist individuals in coping with psychological distress, stressful environments, and complex thoughts and emotions (Berryhill et al., 2018). Knowing this, it is possible that psychological flexibility and self-compassion can serve as protective factors against severe psychopathology, including in the perinatal population.

## Self-Compassion and Psychological Flexibility in the Perinatal Population

Self-compassion and psychological flexibility appear to be associated with lower levels of psychological distress, and recent research has noted similar findings within the perinatal population. A recent study found that a sample of women with higher levels of self-compassion and psychological flexibility experienced fewer depressive and anxiety symptoms (Monteiro et al., 2019). The researchers suggested this may be because these women were more likely to accept their private events (e.g., thoughts and feelings) rather than avoid them. Other researchers have also found in perinatal samples that women with higher endorsements of depression and anxiety had significantly lower levels of self-compassion (Felder et al., 2016). When looking at postpartum women, higher levels of self-compassion have also been strongly associated with a lower likelihood of developing postpartum depression or anxiety (Mahurin-Smith & Beck, 2022). Recent research has even highlighted that interventions that foster the growth of intimate partner relationship satisfaction and self-compassion in couples who are expecting a baby may diminish levels of perinatal depression (Kumar et al., 2022).

There appears to be a lack of research looking specifically at the relationship between psychological flexibility and perinatal anxiety. Previous research has found that psychological inflexibility was predictive of early postpartum depressive symptoms in mothers with medically vulnerable infants (Stotts et al., 2019). Very recently, Prokopowicz et al. (2022) found that low levels of psychological flexibility may be predictive of the development of anxiety disorders in the immediate postpartum period.

## COVID-19 and Perinatal Anxiety

It is crucial to note that levels of maternal depression and anxiety have increased significantly since the start of the COVID-19 pandemic (Lebel et al., 2020; Moyer et al., 2020; Nanjundaswamy et al., 2020). In 2020, expecting mothers suddenly became concerned about the risk of exposure to the virus on the fetus, the safety of having partners in the delivery room, possible transmission of the virus through breastfeeding, and potential greater susceptibility to getting COVID-19 given the higher risk of respiratory infections during pregnancy (Chen et al., 2020; Diamond et al., 2020; Nanjundaswamy et al., 2020; Zhang et al., 2020). A recent study conducted by Moyer et al. (2020) looked at factors associated with changes in anxiety since the start of the pandemic and found that pregnant women reported significantly higher levels of stress connected to pandemic-related concerns. Some of the stressors identified included fear of losing childcare, concern about getting infected with the virus, fear of losing a job or an income, worries about food running out, concern about going to in-person doctors' visits, and fear about delivering a baby in the hospital. Even in the years following the pandemic, research has demonstrated increased levels of depression and anxiety in perinatal populations that are likely associated with pandemic-related distress (Zhang et al., 2022).

## The Present Study

Empirical research has primarily focused on maternal depression. However, perinatal anxiety is another significant form of psychological distress that ought to be better understood given its clear correlation with poor outcomes related to maternal physical health, mother-infant bond, and other important aspects of mothers' lives (Leach et al., 2017; Muzik & Borovska, 2010). The processes of psychological flexibility and self-compassion appear to be protective against psychopathology and severe distress in other populations. However, there is still a lack of research that focuses on these constructs, specifically in the context of perinatal anxiety. The present study aimed to better understand the relationship between perinatal anxiety and perceived quality of life while also considering potential influences of the processes of self-compassion and psychological flexibility on this relationship using moderation analyses.

## Hypotheses

**Hypothesis 1a:** Perinatal anxiety and quality of life will be negatively correlated. It is predicted that individuals who endorse lower levels of perinatal anxiety will report higher levels of quality of life.

**Hypothesis 1b:** It is also predicted that individuals who endorse lower levels of perinatal anxiety will report higher levels of overall or global life satisfaction.

**Hypothesis 2:** Self-compassion and perinatal anxiety will also be negatively correlated. Those with higher levels of self-compassion will report lower levels of perinatal anxiety. This is predicted because even if participants experience average or expected levels of perinatal anxiety, higher levels of self-compassion may allow individuals to better tolerate this distress, such that it does not exacerbate symptoms to the levels seen in anxiety disorders.

**Hypothesis 3:** Psychological flexibility and perinatal anxiety are predicted to be negatively correlated. Those with higher levels of psychological flexibility will report lower levels of perinatal anxiety for the same reasons as noted in Hypothesis 2.

**Hypothesis 4:** Levels of psychological flexibility will change the association between perinatal anxiety and perceived quality of life as well as the association between perinatal anxiety and life satisfaction. Despite the endorsement of some perinatal anxiety, higher levels of psychological flexibility may allow individuals to accept and better confront their distress rather than attempt to avoid the anxiety, which in turn, may be associated with higher levels of quality of life and overall life satisfaction.

**Hypothesis 5:** Levels of self-compassion are also predicted to change the association between perinatal anxiety and perceived quality of life, as well as the association between perinatal anxiety and life satisfaction. It is anticipated that individuals with higher levels of self-compassion will be better able to embrace their private experiences without judgment, which will likely contribute to higher levels of quality of life and overall life satisfaction.

# Method

## Participants

A statistical power analysis was conducted using G*Power to determine the number of participants the researcher would likely need to detect significant moderation effects. The G*Power analysis used a linear multiple regression: fixed model, $R^2$ deviation from zero statistical tests ($F$ tests test family) with a 0.15 effect size, 0.05 an error probability, 0.8 power (1-b error probability), and three predictors (self-compassion, psychological flexibility, and the interaction). The estimated sample size with the abovementioned parameters was 77 participants, but the researcher sought to include 120 final participants to increase the study's power.

Participants between ages 25 and 40 in their second and third trimesters of pregnancy were recruited using the online resource Amazon Mechanical Turk (MTurk) beginning in November 2022 and ending in January 2023. The age range of 25–40 was selected to rule out additional anxiety that may be due to young pregnancy or geriatric pregnancy, which are often considered to be higher-risk pregnancies that may lead to heightened levels of anxiety. On average, it took participants about 14 minutes to complete the survey ($M$ = 13.61, $SD$ = 8.48).

The MTurk service allows researchers to distribute surveys to individuals affiliated with this service ("MTurk workers") who complete various surveys for small monetary incentives. After a participant selects a survey, they can complete it and submit their responses for review by the researcher. All participants were also provided with a random survey code (using a random code generator in Qualtrics) that allowed for anonymous confirmation that surveys collected in Qualtrics matched those accepted in MTurk. Participants who had their data accepted were paid $0.90 for their participation in the study..

A total of 238 participants had their surveys accepted by the researcher in MTurk for final review. Participants and their data were again reviewed and removed from the final dataset if they were not between the ages of 25 and 40, there was clear evidence of the participant taking the survey more than once, there was evidence of inconsistent or random responding or other obvious signs of lack of engagement with the survey, an inaccurate survey code that did not match survey codes collected in MTurk, or if the

participants spent less than five minutes on the survey. The final number of participants included in the data analysis was 107 individuals.

Statistical analysis of demographic variables demonstrated that the present study's sample consisted mostly of female-identifying (99.1%), White (87.9%), heterosexual (74.8%), married (77.6%), and middle-class (89.7%) individuals. The sample had an age range of 25–40 ($M = 29.93$, $SD = 4.595$). Most of the sample indicated they had a bachelor's degree (72.9%), and most were geographically located in the Midwestern United States (40.2%). Just over half (54.2%) of the sample reported that they did not have previous children before the current pregnancy, and a sizeable percentage of the sample indicated that they felt they currently had access to adequate/acceptable levels of social support (42.1%). Just over half (54.2%) of the respondents reported that they have had previous experience with mental health services, while 43.0% reported that they have not, and 2.8% preferred not to answer this question. See Tables 1 and 2 for additional information about the sample's demographic characteristics.

## Table 1

*Demographics of Participants*

| Variable | | | *N* | % |
|---|---|---|---|---|
| Mean Age (SD) | | | *M* = 29.93 (4.595) | - |
| Gender | | | | |
| | Female | | 106 | 99.1 |
| | Other | | 1 | 0.9 |
| Ethnicity | | | | |
| | American Indian | | 5 | 4.7 |
| | Asian | | 5 | 4.7 |
| | Black/African American | | 2 | 1.9 |
| | White | | 94 | 87.9 |
| | Other | | 1 | 0.9 |
| Location | | | | |
| | Midwest | | 43 | 40.2 |
| | Northeast | | 16 | 15.0 |
| | Southeast | | 23 | 21.5 |
| | Southwest | | 11 | 10.3 |
| | West | | 14 | 13.1 |
| SES | | | | |
| | Lower Class | | 6 | 5.6 |
| | Middle Class | | 96 | 89.7 |
| | Upper Middle | | 4 | 3.7 |
| | Upper Class | | 1 | 0.9 |
| Marital Status | | | | |
| | In a Relationship | | 24 | 22.4 |
| | Married/Domestic Partnership | | 83 | 77.6 |
| Sexual Orientation | | | | |
| | Heterosexual | | 80 | 74.8 |
| | Lesbian | | 1 | 0.9 |
| | Gay | | 1 | 0.9 |
| | Bisexual | | 25 | 23.4 |
| Education | | | | |
| | Some High School | | 1 | 0.9 |
| | High School or Equivalent (GED) | | 8 | 7.5 |
| | Bachelor's Degree | | 78 | 72.9 |
| | Master's Degree | | 19 | 17.8 |
| | Doctoral Degree | | 1 | 0.9 |

**Table 2**

*Other Demographics*

| Variable | | *N* | % |
|---|---|---|---|
| Previous Children | | | |
| | Yes | 49 | 45.80 |
| | No | 58 | 54.20 |
| Previous Mental Health Services | | | |
| | Yes | 58 | 54.20 |
| | No | 46 | 43.00 |
| | Prefer not to answer | 3 | 2.80 |
| Access to Social Support | | | |
| | Fair | 25 | 23.40 |
| | Adequate | 45 | 42.10 |
| | Excellent | 37 | 34.60 |

## Measures

### Quality of Life Scale

The Quality of Life Scale (QOLS; Burckhardt & Anderson, 2003) was utilized to gather information about satisfaction with various life aspects. This 16-item self-report measure assesses participants' experience of fulfillment of their needs and desires (Burckhardt & Anderson, 2003). John Flanagan originally developed the QOLS in the 1970s, and the measure was later adapted in 2003 for use with other populations, including those with chronic illness (Burckhardt & Anderson, 2003). The QOLS asks questions related to the following areas: material and physical well-being; interpersonal relationships (e.g., family, spouse); social, community, and civic activities; personal development and fulfillment; recreation; and independence. Flanagan did not report internal consistency reliability estimates (in his original work in the 1970s). Later studies looking specifically at chronic illness populations found that the QOLS demonstrated sufficient internal consistency with alpha coefficients ranging between .82 and .92 and high test-retest reliability over 3-weeks ($r$ = .78 to $r$

= .84) (Burckhardt & Anderson, 2003). The estimate of internal consistency for the present study's sample was a =.96.

### Satisfaction With Life Scale

The Satisfaction With Life Scale (SWLS; Diener et al., 1985) is a 5-item self-report measure used as a global measure of the overall life satisfaction of the participants. The SWLS has been shown to demonstrate good internal consistency (a = .87) and test-retest reliability (correlation of .82) across two months (Magyar-Moe, 2009). The present study's sample yielded excellent internal consistency (a = .91) for the SWLS.

### The Perinatal Anxiety Screening Scale

The Perinatal Anxiety Screening Scale (PASS; Somerville et al., 2014) is a 31-item self-report instrument that assesses acute anxiety and adjustment, general worry and specific fears, perfectionism, control and trauma, and social anxiety in the maternal population. The PASS has demonstrated strong internal consistency (a = .96), adequate test re-test reliability ($r$ = .74), and adequate convergent validity, with its global scores significantly correlated with the Depression Anxiety Stress Scale (DASS) anxiety subscale ($r$ = .78), DASS stress subscale ($r$ = .81); the Edinburgh Postnatal Depression Scale (EPDS)–Anxiety subscale ($r$ = .74); the State-Trait Anxiety Inventory (STAI)–State ($r$ = .75); STAI-Trait ($r$ = .83); Beck Depression Inventory (BDI) ($r$ = .81); and the EPDS total score ($r$ = .82) (Somerville et al., 2014; Somerville et al., 2015). The internal consistency for the present study's sample was a = .96, which is deemed excellent.

### The Self-Compassion Scale–Short Form

The Self-Compassion Scale–Short Form (SCS-SF; Raes et al., 2011) is a 12-item self-report measure that assesses self-compassion levels and measures six specific components: (Self-Kindness, Common Humanity, Mindfulness, Self-Judgment, Isolation, and Over-Identification). The SCS-SF is deemed to have acceptable internal consistency with a ≥ .86 and a nearly perfect correlation with the SCS long form ($r$ ≥ .97) (Raes et al.,

2011). The present study's sample demonstrated good internal consistency (a = .86).

### The Acceptance and Action Questionnaire

The Acceptance and Action Questionnaire (AAQ-2; Bond et al., 2011) is a 7-item questionnaire that measures the constructs of acceptance, psychological flexibility, and experiential avoidance. The AAQ-2 has coefficients that are deemed to be in the acceptable range (.78–.88) and test-retest reliabilities that are also acceptable at .81 and .79. The AAQ-2 also appears to demonstrate acceptable discriminant validity (Bond et al., 2011). The current sample demonstrated excellent internal consistency on the AAQ-2 (a = .93).

### Demographic Questionnaire

This questionnaire allowed participants to share relevant demographic information such as age, race, ethnicity, gender identity, sexual orientation, level of highest education, marital status, socioeconomic status, access to social support, previous/current experience with mental health services, and number of children not including the current pregnancy.

### Free-Response Items

Participants were also given the option to comment on the following questions in a free-response format:

- Do you believe the COVID-19 pandemic has or has not impacted your emotional well-being during pregnancy? If so, please explain below:
- Are there any other factors that have or may have impacted your overall emotional well-being during pregnancy? If yes, please briefly describe below:

### Procedure

Prior to data collection, the Institutional Review Board (IRB) of the principal investigator's university approved the present study, and an intellectual property agreement to use the PASS for the study was signed by the examiners for the authors of the PASS (Somerville et al., 2014). As

discussed, participants were recruited utilizing Amazon Mechanical Turk (MTurk). Through MTurk, participants were given access to the title and a brief description of the purpose of the survey. Participants who indicated interest were then presented with an online consent form with additional information about the study, relevant resources, researcher contact information, the option to opt-out at any time, and inclusion criteria for participation in the study (i.e., age, second or third trimester of pregnancy, and being able to speak and comprehend English, as the survey was only available in English). Participants who consented to participate in the study were then presented with additional qualification questions that assessed inclusion criteria. Participants who passed through the qualification questions then completed the following measures in order: the Quality of Life Scale (QOLS; Burckhardt & Anderson, 2003), the Perinatal Anxiety Screening Scale (PASS; Somerville et al., 2014), the Self-Compassion Scale-Short Form (SCS-SF; Raes et al., 2011), the Satisfaction with Life Scale (SWLS; Diener et al., 1985), the Acceptance and Action Questionnaire (AAQ-II; Bond et al., 2011), and a demographic questionnaire developed by the researchers. After completing the measures, participants were prompted with the free-response questions to help elucidate associations between constructs and experiences related to COVID-19.

Individuals finished participating in the study by obtaining a copy of a debriefing form and a randomly generated survey code that they then placed into MTurk to submit their results and become eligible to receive payment for completing the study.

## Results

The data were analyzed using IBM Statistical Package for the Social Sciences (SPSS), Version 27.0. The PROCESS plug-in (Hayes, 2022) was employed for formal moderation analyses. Prior to formal data analysis, responses were reviewed for missing data and random responses. Given that bootstrapping methods, robust to violations in assumptions, were employed, data were analyzed without having to meet assumptions of linear regression.

Parametric and nonparametric correlations (Pearson's *r*, point-biserial, and Spearman's rho, depending on the nature of the variable), as well as independent samples *t*-tests for the categorical variable of race, were

conducted to better understand potential relationships between demographic and criterion variables and to determine if any covariates needed to be controlled for in the hypothesis testing and supplemental analyses. There were no significant associations between demographic variables and the outcome variables, so there was no need to include any demographics as covariates for the remainder of the analyses.

Descriptive statistics were examined to better understand the participants' responses to the various surveys (Table 3). With regard to overall levels of perinatal anxiety, participants scored between 3 and 87 ($M$ = 48.36; $SD$ = 17.43). Scores on the PASS are interpreted by severity ranges of minimal anxiety symptoms (score of 0–20), mild-moderate anxiety symptoms (21-41), and severe anxiety levels (42-93), which suggests that the mean score of this sample fell in the severe anxiety level range. When examining levels of quality of life as measured by the QOLS, the current study's sample had a mean quality of life score of 78.57 ($SD$ = 16.42), which was below average. In terms of life satisfaction, the current sample had a mean score of 25.58 ($SD$ = 6.17), indicating endorsements of life satisfaction that fall just between the slightly satisfied and satisfied ranges. The current sample's mean score for levels of self-compassion was 3.06 ($SD$ = .27), which indicates moderate levels of self-compassion. Lastly, the current sample had a mean score of 29.30 ($SD$ = 8.68) for psychological flexibility levels, indicating clinically elevated levels of psychological inflexibility.

**Table 3**

*Descriptive Statistics on Measure Totals*

| Variable | *N* | Minimum | Maximum | *M* | *SD* | Descriptor |
|---|---|---|---|---|---|---|
| 1. QOLS Total | 107 | 25 | 107 | 78.57 | 16.42 | Below Average |
| 2. PASS Total | 107 | 3 | 87 | 48.36 | 17.43 | Severe |
| 3. SCS-SF Total | 107 | 2.5 | 4.08 | 3.06 | 0.27 | Moderate |
| 4. SWL Total | 107 | 10 | 35 | 25.58 | 6.17 | Slightly Satisfied - Satisfied |
| 5. AAQ Total | 107 | 7 | 45 | 29.30 | 8.68 | Clinically Elevated |

A correlation matrix was produced to test initial hypotheses and to better understand relationships between the processes of perinatal anxiety, self-compassion, psychological flexibility, quality of life, and overall life satisfaction (Table 4). The first hypothesis predicted that perinatal anxiety and quality of life would be negatively correlated. The correlation was negative but not significant, $r$ = -.10, $p$ = .31. That being said, a small to medium negative significant correlation was found between perinatal anxiety and overall satisfaction with life, indicating that participants who reported lower levels of perinatal anxiety reported higher overall satisfaction with life, $r$ = -.24, $p$ = .01. Regarding Hypothesis 2, there was no significant correlation between levels of self-compassion and perinatal anxiety, $r$ = -.16, $p$ = .09. However, Hypothesis 3 was supported in that there was a large, positive significant correlation between psychological inflexibility and perinatal anxiety, $r$ = .53, $p$ < .001, indicating that those reporting higher levels of psychological inflexibility endorsed higher levels of perinatal anxiety.

**Table 4**

*Correlation Matrix of Main Study Variables*

| Variable | *M* | *SD* | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| 1. QOLS Total Score | 78.57 | 16.42 | | | | |
| 2. PASS Total Score | 48.36 | 17.43 | -.10 | | | |
| 3. SCS-SF Total | 3.06 | .28 | .02 | -.16 | | |
| 4. SWL Total Score | 25.58 | 6.17 | **.59**** | **-.24*** | .12 | |
| 5. AAQ Total Score | 29.30 | 8.68 | -.10 | **.53**** | **-.27**** | **-.27**** |

**Correlation is significant at the 0.01 level (2-tailed)
*Correlation is significant at the 0.05 level (2-tailed)

The remaining hypotheses were tested by running separate moderation analyses via hierarchical regression using the PROCESS plug-in for SPSS. Moderation model 1 was utilized with 95% confidence intervals and 10,000 bootstrapping samples. This moderation analysis allowed us to examine whether varying levels of self-compassion and psychological flexibility would change the relationship between perinatal anxiety and quality of life. The $R^2$ change value and related statistics were analyzed to determine whether there were significant interaction effects. The first two moderation analyses examined the hypothesis predicting that levels of psychological flexibility would change the association between perinatal anxiety and quality of life, and overall life satisfaction (see Table 5 in Appendix). There were no significant interaction effects found in the first two moderation analyses, indicating that psychological flexibility was not a significant moderator of the association between perinatal anxiety and quality of life, $R^2$ change = .002, $b$ = .0041, 95% CI [-0.01, 0.21], $SE$ = .0085, $p$ = .63; or satisfaction with life, $R^2$ change = .01, $b$ = .0038, 95% CI [-.0022, 0.0099], $SE$ = .0031, $p$ = .21. The last two moderation analyses examined the hypothesis that levels of self-compassion would change the association between perinatal anxiety and quality of life and overall life satisfaction (See Table 6 in appendix). As with the previous moderation analyses, there were no significant interaction effects found, which suggests that self-compassion was also not a significant moderator of the association between perinatal anxiety and quality of life, $R^2$ change = .0070, $b$ = -.26, 95% CI [-0.86, 0.34], $SE$ = .30, $p$ = .39; or satisfaction with life, $R^2$ change = .0030, $b$ = -.06, 95% CI [-0.28, 0.16], $SE$ = .11, $p$ = .57.

## Commentary on Free-Responses

Supplemental data were examined on an exploratory basis to understand more about the potential influence of COVID-19 on distress during pregnancy and other factors that may impact overall well-being during pregnancy. Participants were given the choice to comment on one or both free-response prompts about factors that may or may not have impacted participants' well-being during pregnancy. In total, 44 participants responded to one or both of the prompts. The first free-response question examined specifically the potential impact that the COVID-19 pandemic may have had on overall well-being during pregnancy. Some themes within this free-response include fears of COVID-19 being a dangerous virus and impacting the health of the mother and baby if the mother became infected, beliefs that being fully vaccinated against COVID-19 helped improve levels of distress and worries about contracting the virus, and concerns that the lockdown and social distancing made regular check-ups/appointments with OB/GYNs more challenging. Other participants reported heightened fear, loneliness, sadness, stress, and anxiety throughout the COVID-19 pandemic that impacted overall well-being. Other factors with COVID-19 that were discussed included loss of job and financial support after the lockdown and how support from friends and family helped significantly.

When asked about other factors that may or may not have impacted overall well-being during pregnancy, participants said that support from family and friends was tremendously helpful. Other factors that appeared to have more of a negative impact include being overweight or in poorer health, morning sickness, additional fatigue, mood swings or crying spells, increased appetite, body aches, and physical swelling. Other participants noted that it was challenging to have less attention on the mother and more attention on the baby or pregnancy, that financial issues created significantly more stress, and that being fearful or uncertain about medical treatment increased overall levels of anxiety during pregnancy. Other factors identified as negatively impacting overall well-being during pregnancy include additional fears that something bad may happen during the pregnancy, grief or loss of a family member and previous history of mental illness.

## Discussion

This study sheds some light upon perinatal anxiety and psychosocial processes that may impact overall emotional well-being and quality of life in the pregnant population—a population that is unfortunately understudied and underserved when it comes to psychological research and interventions. It is estimated that up to 50% of women experiencing problems such as anxiety and depression in pregnancy are never identified due to limitations with appropriate screening procedures or resources and tremendous stigma related to expressing mental health concerns as a mother or pregnant individual (Accortt & Wong, 2017; Gjerdingen & Yawn, 2007). It is imperative to better understand the psychological concerns and needs of pregnant women. Despite evidence of potential consequences, most available research has focused primarily on perinatal and postpartum depression, and there is limited research on the psychosocial processes of self-compassion and psychological flexibility, which have been established as protective processes against severe psychopathology in other populations (Berryhill et al., 2018).

The present study aimed to look at perinatal anxiety and its relationship to quality of life and explore the potential role of the psychosocial processes of self-compassion and psychological flexibility on this relationship using moderation analyses. In general, the sample had a mean level of perinatal anxiety that fell in the severe anxiety range, which seems to be higher than what has been seen in previous research with nonclinical populations. Recent research with the PASS has included both antenatal and postnatal individuals, where participants were analyzed in separate groups based on their severity rating. Somerville et al. (2015) found that most participants (in a sample of participants with and without previous/current mental health diagnoses) fell in the minimal anxiety range ($N$ = 201; $M$ = 13.37, $SD$ = 7.74), while 121 of the 410 participants fell in the mild-moderate range ($M$ = 30.44, $SD$ = 13.65). Only 88 fell into the severe anxiety range ($M$ = 52.99, $SD$ = 15.67). This suggests that a significant portion of the participants in the current study endorsed higher levels of perinatal anxiety than what is to be expected based on previous research. This may be, in part, because the description of this survey indicated that researchers would be examining perinatal anxiety specifically, increasing the likelihood that MTurk workers who completed the survey were both pregnant and experiencing heightened anxiety and had more of an interest in completing this survey rather than one that did not specify the particular psychological processes of interest.

The current sample also reported lower than expected levels of quality of life, and life satisfaction ranges fell mostly between the slightly satisfied and satisfied ranges. The significantly high levels of endorsed perinatal anxiety in the current sample may explain the lower endorsement of quality of life on the QOLS. The average total score for healthy populations is around 90 (no *SD* reported), which suggests the current study's sample endorses quality of life levels that are a bit below average (Burckhardt & Anderson, 2003). Previous research on quality of life (QOLS) mean scores for the general female population in Norway was 84.1 (*SD* = 12.5), and those with disease or other health problems were 81±12.8 (Truong et al., 2020). Pregnancy can also come with co-occurring medical problems or discomforts, which may explain why the current sample's mean score is closer to the mean score seen in the Norway study of a female population with disease or other health problems (Truong et al., 2020). A previous study examining satisfaction with life in pregnant women found a mean score of 28.73 (*SD* = 5.76) for women aged 30 and younger and a mean score of 29.22 (*SD* = 4.89) for pregnant women over the age of 30 (Yu et al., 2020).

Levels of self-compassion in the current study largely reflected what has been documented in previous research with the perinatal population: the mean score of self-compassion fell in the moderate range. Previous research on perinatal depression and self-compassion found that women before an intervention had a mean score of 2.56 (*SD* = .62), which also suggests moderate levels of self-compassion (Townshend & Caltabiano, 2019). Lastly, the current sample had a mean score of psychological flexibility that was in the clinically elevated range, which suggests higher levels of psychological inflexibility within this sample. Previous research has noted mean scores of 17.34 (*SD* = 4.37) and 18.53 (*SD* = 7.52) for nonclinical populations (Bond et al., 2011). This higher level of inflexibility may be related to the higher levels of distress and endorsed perinatal anxiety reported by the participants.

With regard to the hypotheses, it was anticipated that perinatal anxiety and quality of life would be negatively correlated in that those who endorsed lower levels of perinatal anxiety would report higher levels of quality of life as measured by the QOLS. It was also predicted that those endorsing lower levels of perinatal anxiety would report higher overall life satisfaction as measured by the SWLS. These hypotheses were partially supported in that

perinatal anxiety and quality of life were negatively correlated, though the finding was not significant. However, a small to medium negative significant correlation was found between perinatal anxiety and overall life satisfaction, indicating that those endorsing lower levels of perinatal anxiety report higher overall satisfaction with life. This may suggest that participants were more likely to report lower levels of quality of life in areas specified on the QOLS that can be greatly impacted by pregnancy, such as physical well-being and fitness, interpersonal relationships, having/rearing children, and engaging in civic duties. When asked more generally about overall life satisfaction, those less preoccupied with emotional and psychological distress endorsed significantly higher levels of overall satisfaction with life.

It was also predicted that those with higher levels of both self-compassion and psychological flexibility would report lower levels of perinatal anxiety. No significant results were found when it came to self-compassion. However, there was a large, positive, significant correlation between psychological flexibility and perinatal anxiety, suggesting that those with higher levels of psychological inflexibility report higher levels of perinatal anxiety. It may be that individuals who are less able to confront, accept, and tolerate anxiety and related distress and instead engage in any means to avoid this distress, in turn, may be more likely to experience disordered levels of anxiety. Pregnant individuals may regularly experience some level of perinatal anxiety. However, if one is better able to confront the distress, remain present, and engage in values-consistent activity even when faced with these emotional challenges, they may experience anxiety in a much more adaptive way than individuals who typically try to actively avoid these private events and experiences of distress.

Moderation analyses were also employed to better understand the potential influence psychological flexibility and self-compassion had on the relationship between perinatal anxiety and quality of life or life satisfaction. Neither hypothesis was supported in that neither psychological flexibility nor self-compassion was found to be a significant moderator of the association between perinatal anxiety and quality of life or satisfaction with life. Psychological flexibility, self-compassion, quality of life, and life satisfaction may be so complex and somewhat similar in terms of what

elements make up these constructs that it could be challenging to find significant interaction effects.

This study also highlighted valuable information related to the impact of COVID-19 on pregnancy and other factors that may contribute to overall well-being while pregnant. These meaningful reflections emphasized the fear, uncertainty, and potential dangers that pregnant women face when it comes to COVID-19, as well as other general life circumstances such as mood and physical changes, loss of loved ones, and loss of employment or financial stability, levels of social support, and the overall tremendous life adjustment that comes with childbirth that can greatly impact overall well-being during pregnancy.

## Limitations

Despite having some interesting and unexpected findings, this study has several salient limitations. To start, the MTurk population may have included participants who are particularly interested in participating in research or in economic circumstances where they use MTurk to make some additional money, which may have led to some potential bias or response that is not necessarily reflective of the general population. The MTurk method of data collection also presented with numerous complications in that it appeared that many of the MTurk workers who attempted to receive compensation for participation in the study appeared to be computer bots (based on unusually rapid and random responding and disorganized, incomprehensible text within the free-response sections) or individuals who took surveys numerous times even when not eligible. Given this complication, the researchers had to implement numerous methods and criteria to ensure that the final sample only included legitimate participants.

Another limitation is that this study included several self-report surveys where the average time to complete the study with adequate levels of attention was about 20-25 minutes. This may have increased the possibility of fatigue and lower engagement. The free-responses were also placed at the end, which may have decreased the likelihood of people responding after a lengthy survey. One of the demographic questions also asked if participants had any previous experiences with mental health services but did not specifically ask about current experience with mental health. This may have affected some of the responses; someone with current but not previous

experiences with services may have said no, which does not fully reflect their openness and receipt of services.

Further, the study relied on self-report measures, which may not fully reflect participants' experiences given various response biases and contextual factors already discussed. Along similar lines, this population was rather homogeneous in that most participants were female-identifying, white, well-educated individuals from the Midwestern United States, limiting the ability to generalize findings to more diverse populations. It is also important to emphasize that this study was correlational, meaning no conclusions about directionality or causality may be drawn.

This survey data was also gathered towards the end of 2022 and the start of 2023. As was the case throughout the heart of the pandemic, the state and impact of COVID-19 were variable from person to person. It is hard to know how much of an influence COVID-19 had (or did not have) on the data and its relevance to participants and their emotional experiences at the time of data collection, especially given the just-mentioned factors that may have contributed to some participants not responding to the related open-ended questions.

## Implications and Future Directions

The present study served to contribute to the research area of reproductive health psychology, which unfortunately has a dearth of research and understanding of perinatal mood and anxiety disorders that stem beyond depression. It also brings awareness to psychosocial processes that may be protective factors or may be valuable targets for future evidence-based psychological interventions for those struggling with perinatal mental health. Given the demonstrated relationships between perinatal anxiety and satisfaction with life and perinatal anxiety and psychological flexibility, it seems that interventions such as acceptance and commitment therapy (ACT), which focuses on contact and awareness of the present moment, committed action in line with values despite experiences of emotional distress, and acceptance rather than avoidance of emotional experiences and private events, would be greatly beneficial to this population.

Given this, future research with multimodal forms of assessment is imperative to further examine related processes and potential interventions

that foster them. These could be compared with other evidence-based treatments, such as cognitive behavioral and dialectical behavior therapy, emphasizing slightly different processes. Lastly, given the potential role that shame, and stigma may play within this population, where there is tremendous societal pressure to be a seemingly perfect mother, it would be especially interesting to include a measure of stigma towards imperfection as a mother or even stigma toward needing mental health services more broadly. Additional research would help clarify the meaning behind these psychosocial processes and how they may influence perinatal mental health and overall quality of life. Further research would also serve to understand this underserved and understudied health population better and increase awareness of the need for more mental health follow-ups and interventions that may greatly improve or at least support individuals during their pregnancy experience. By developing a greater understanding and insight into this distress, as well as knowledge of how to best help these individuals, it may be possible to change the statistic of having up to 50% of expecting mothers suffering in silence (Accortt & Wong, 2017; Gjerdingen & Yawn, 2007).

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# Appendix

## Table 5

*Partial Output for PROCESS Macro for Simple Moderation (Model 1 - Psychological Flexibility as the Moderator)*

| Quality of Life | | | | | | |
|---|---|---|---|---|---|---|
| | Coefficient | SE | *t* | *p* | LLCI | ULCI |
| Constant | 78.24 | 1.73 | 45.11 | .0000 | 74.80 | 81.68 |
| PASSTotal | -0.05 | 0.11 | -0.46 | 0.65 | -0.27 | 0.17 |
| AAQTotal | -0.11 | 0.22 | -0.51 | 0.61 | -0.55 | 0.32 |
| Int_1 | 0.0041 | 0.0085 | 0.48 | 0.63 | -0.01 | 0.21 |

*Note.* Outcome variable (Y) = QOLSTotal; Focal Predictor (X) = PASSTotal; Moderating Variable (W) = AAQTotal; INT_1 = PASSTotal x AAQTotal

| Satisfaction with Life | | | | | | |
|---|---|---|---|---|---|---|
| | Coefficient | SE | *t* | *p* | LLCI | ULCI |
| Constant | 25.27 | 0.62 | 40.51 | .0000 | 24.04 | 26.51 |
| PASSTotal | -0.04 | 0.04 | -1.06 | 0.29 | -0.12 | 0.04 |
| AAQTotal | -0.12 | 0.08 | -1.51 | 0.13 | -0.28 | 0.04 |
| Int_1 | 0.0038 | 0.0031 | 1.26 | 0.21 | -0.0022 | 0.0099 |

*Note.* Outcome variable (Y) = SWLTotal; Focal Predictor (X) = PASSTotal; Moderating Variable (W) = AAQTotal; INT_1 = PASSTotal x AAQTotal

**Table 6**

*Partial Output for PROCESS Macro for Simple Moderation (Model 1 - Self-Compassion as the Moderator)*

| Quality of Life | | | | | | |
|---|---|---|---|---|---|---|
| | Coefficient | SE | *t* | *p* | LLCI | ULCI |
| Constant | 78.37 | 1.61 | 48.59 | .00 | 75.18 | 81.57 |
| PASSTotal | -0.09 | 0.09 | -0.92 | 0.36 | -0.27 | 0.10 |
| SCSSFTotal | -2.04 | 6.70 | -0.30 | 0.76 | -15.32 | 11.24 |
| Int_1 | -0.26 | 0.30 | -0.86 | 0.39 | -0.86 | 0.34 |

*Note.* Outcome variable (Y) = QOLSTotal; Focal Predictor (X) = PASSTotal; Moderating Variable (W) = SCSSFTotal; INT_1 = PASSTotal x SCSSFTotal

| Satisfaction with Life | | | | | | |
|---|---|---|---|---|---|---|
| | Coefficient | SE | *t* | *p* | LLCI | ULCI |
| Constant | 25.53 | 0.59 | 43.26 | .00 | 24.36 | 26.70 |
| PASSTotal | -0.08 | 0.03 | -2.33 | 0.02 | -0.15 | -0.01 |
| SCSSFTotal | 1.35 | 2.45 | 0.55 | 0.58 | -3.51 | 6.21 |
| Int_1 | -0.06 | 0.11 | -0.58 | 0.57 | -0.28 | 0.16 |

*Note:* Outcome variable (Y) = SWLTotal; Focal Predictor (X) = PASSTotal; Moderating Variable (W) = SCSSFTotal; INT_1 = PASSTotal x SCSSFTotal

# Maternal Suicide in the United States: Opportunities for Improved Data Collection and Health Care System Change

Cindy Lee Herrick, MA, PMH-C, CPSS and Joy Burkhard, MBA

Maternal suicide, once overlooked in mortality rates, is now recognized as a major contributor to pregnancy-related deaths in the United States. Recent data highlighting a surge in general population suicides underscores the urgency of addressing maternal suicide. It ranks among the top three causes of pregnancy-related deaths, accounting for up to 20% of maternal fatalities. While data collection challenges persist, state Maternal Mortality Review Committees are enhancing consistency in reviewing and documenting maternal deaths. Mental health conditions, particularly suicide, are identified as a key underlying cause, contributing to nearly 23% of pregnancy-related deaths, with 80% considered preventable. Recognizing the lasting societal impact, preventive efforts for maternal suicides should be prioritized. The effects of maternal mental distress and suicidality on child development emphasize the

**Cindy Herrick, MA, PMH-C, CPSS** serves as the Senior Editorial and Research Manager at the Policy Center for Maternal Mental Health. **Joy Burkhard, MBA**, is the Founder and Executive Director of the Policy Center, working to close the gaps in maternal mental health care. Correspondence regarding this article should be addressed to 5101 Santa Monica Blvd, Ste 8-326, Los Angeles, CA 90029, cindy.herrick@policycentermmh.org
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need for interventions across clinical, systemic, and policy domains.

*Keywords:* maternal suicide, pregnancy, suicide, mental health, pregnancy-related death

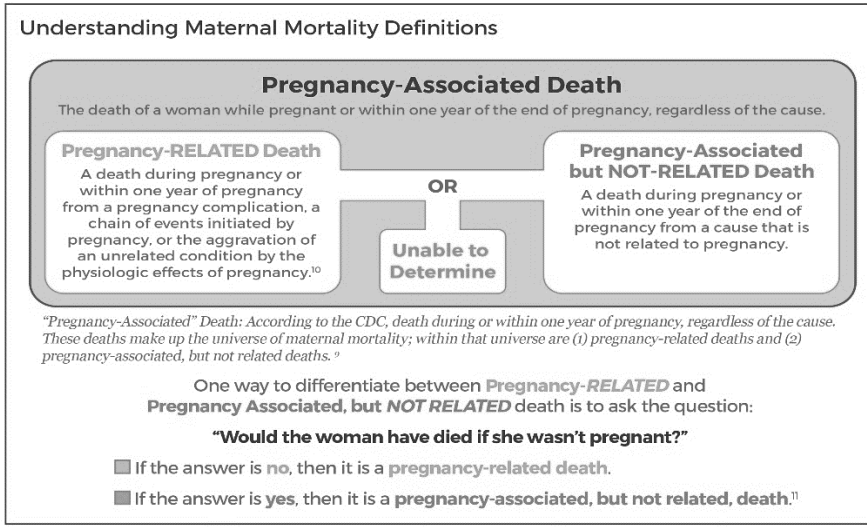
Maternal suicide is a leading cause of maternal mortality in the United States (Orsolini et al., 2016). While maternal mortality has rightfully garnered increasing attention in recent years, maternal suicide has been historically overlooked as a cause of maternal mortality because national maternal mortality rates previously excluded suicides as pregnancy-related deaths, instead classifying maternal suicide deaths as incidental or accidental deaths (Mangla et al., 2019). According to the provisional data from the Centers for Disease Control & Prevention (CDC, 2023), there was a record-high number of deaths in 2022 from suicide for the general US population. As national and state efforts to address maternal mortality through improved public health data collection have increased, maternal suicide has emerged as one of the top three causes of *pregnancy-associated deaths* (see Figure 1) (Campbell et al., 2021). It is estimated that up to 20% of maternal deaths are due to suicide (Campbell et al., 2021), making maternal suicide deaths more common than deaths caused by postpartum hemorrhage or hypertensive disorders (Palladino et al., 2011).

While challenges to standardizing and improving public health data collection from state to state still exist, state Maternal Mortality Review Committees (MMRCs) are increasing consistency regarding how they review and document maternal deaths. The CDC has determined, using the data from 36 state MMRCs, that mental health conditions are a leading underlying cause of pregnancy-related death (Trost et al., 2022a). The CDC defines Maternal Mental Health Conditions as "suicide, overdose/poisoning related to substance use disorder, and other deaths determined by the MMRC to be related to a mental health condition, including substance use disorder" (Trost et al., 2022a). Maternal Mental Health Conditions account for almost 23% of pregnancy-related deaths, and 80% of pregnancy-related deaths are determined to be preventable. As maternal suicides have a lasting and far-reaching societal impact, it is important to prioritize maternal suicide prevention efforts. The negative impact of maternal mental distress and illness on child development is well-documented, as well as the impact of

maternal suicidality on child wellness. Thus, it is important to further examine how to prevent maternal suicides through clinical, systems, and policy shifts.

**Figure 1**

*Understanding Maternal Mortality Definitions*




## Risk Factors and Correlations

As the causes of maternal suicide are complex and multifaceted, an understanding of the spectrum of maternal suicide risk factors is necessary to formulate and adopt appropriate preventive and treatment measures (Review to Action, n.d.).

### Behavioral Health Risk Factors

The most potent risk factors are a personal or family history of psychiatric disorders, a prior suicide attempt, or suicidal ideation (Campbell et al., 2021). Increased symptoms of anxiety have been linked to frequent thoughts of self-harm in depressed postpartum women (Wisner et al., 2013). A bipolar disorder diagnosis puts a woman at increased risk for postpartum psychosis, thus also increasing the risk for maternal suicide (California Task

Force on the Status of Maternal Mental Health Care, 2019). According to the CDC, 34% of pregnancy-related suicides had a documented prior suicide attempt (2020 Mom, 2020). Women with a postpartum psychiatric admission were 70 times more at risk of suicide in their first postpartum year (Appleby et al., 1998). Studies on the general population have shown that 45% of those who die by suicide have seen their primary care physician within a month before their death (Raue et al., 2014).

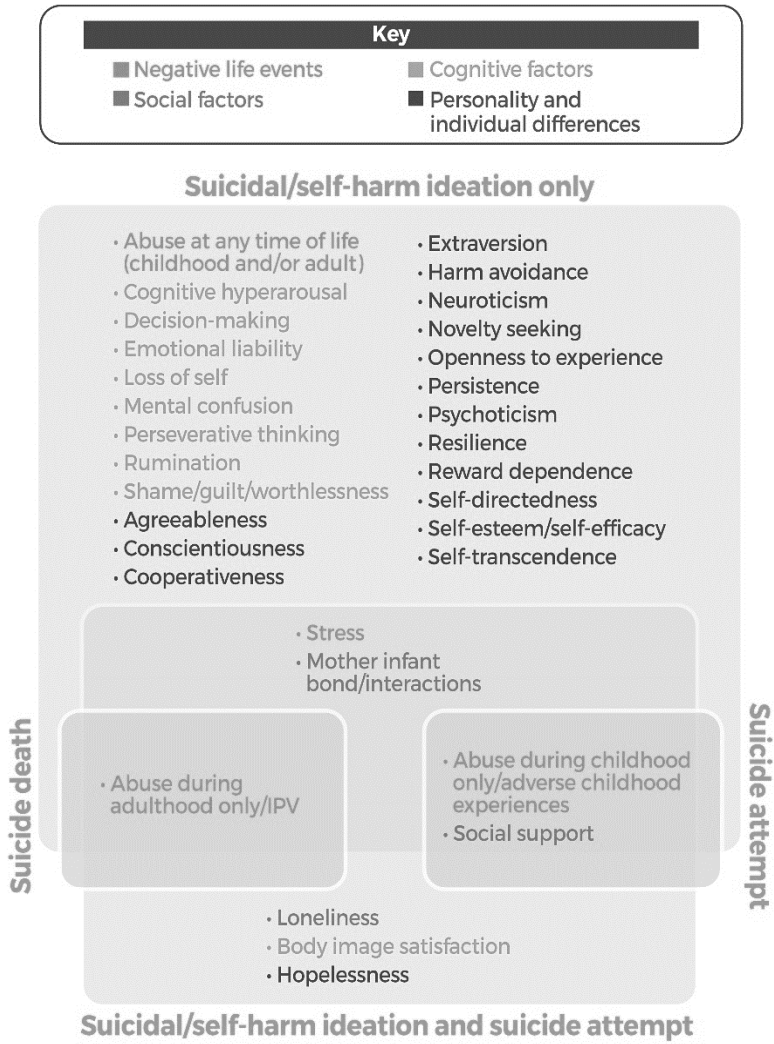
Eighty-four percent of those who die by suicide have had a healthcare visit in the year before their death (Ahmedani et al., 2014). Almost 40% of individuals who died by suicide had been to the emergency room but did not have a prior mental health diagnosis (Ahmedani et al., 2015). The perinatal and postpartum population generally has significantly more contact with healthcare providers, which increases touchpoints for screening and referral to appropriate treatment. This data continues to reinforce the importance of universal screening for all maternal mental health disorders, as well as ongoing support and care for women in the postpartum period as an initial step to preventing maternal suicides.

## Environmental and Social Risk Factors

There is strong evidence that abuse experienced at any time in a woman's life increases the risk of suicidality (suicidal ideation, attempted suicide, death from suicide) during pregnancy and the first postpartum year (Reid et al., 2022) (see Figure 2). Lack of social support during the perinatal period is also strongly associated with suicidal behavior. Further, sleep disturbances significantly increase the likelihood of suicide attempts and suicidal thoughts in adults (Pigeon et al., 2012) and exacerbate thoughts of self-harm in depressed postpartum moms (Sit et al., 2015). Other risk factors for maternal suicide or *suicidal ideation* (see Figure 2) include young age, family conflict, loneliness, and unwanted or unplanned pregnancy (Orsolini et al., 2016). Environmental risk factors such as exposure to disaster, conflict, or war, social and gender inequalities, racial discrimination, belonging to an ethnic or religious minority, having crowded or inadequate housing, and living in rural areas can also elevate the risk for maternal suicide (Orsolini et al., 2016).

**Figure 2**

*What is Suicidal Ideation?*




*Note.* Adapted from "Maternal Suicide Ideation and Behaviour During Pregnancy and the First Postpartum Year: A Systematic Review of Psychological and Psychosocial Risk Factors" by Reid, H. E., Pratt, D., Edge, D., & Wittkowski, A. (2022). *Frontiers in Psychiatry, 13*, 765118. (https://doi.org/10.3389/fpsyt.2022.765118)

## Timing of Maternal Suicides

Research shows that certain times during the perinatal and postpartum periods have elevated risks for maternal suicide. While maternal suicides can happen during pregnancy, most maternal suicides occur in the postpartum period. Sixty-two percent of pregnancy-related suicides occur between 43-365 days postpartum, followed by 24% during pregnancy, and 14% within 42 days postpartum (2020 Mom, 2020). Another study conducted in California yielded a similar result, showing that maternal suicides occur most frequently between 6-12 months (151-365 days) postpartum (Goldman-Mellor & Margerison, 2019). The data reveals critical periods and areas for suicide prevention techniques, mental health and suicide risk screening, and other social and behavioral interventions that can help lower maternal suicide risk. Signs of impending maternal suicide exist and should be utilized in future research to develop effective interventions for preventing maternal suicides.

## Race, Ethnicity, and Maternal Suicidal Ideations and Suicide

Studies show that Black, Indigenous, and People of Color (BIPOC) women have a higher risk for suicidal ideations, while non-Hispanic White women have a higher risk of suicide (Tabb et al., 2020). Women who self-report as "other race" are almost three times more likely than white women to report suicidal ideation in the postpartum period (Tabb et al., 2020). In the immediate postpartum period, Asian women are nine times more likely to report suicidal ideation than their white counterparts. Hispanic and Black women are two times more likely to report suicidal ideation than white women (Tabb et al., 2020).

Recent research reveals that American Indians and Alaska Natives have much higher rates of pregnancy-associated drug-related death and suicide compared with all other racial or ethnic groups. A recent report from the CDC showed that mental health conditions are the top underlying causes of pregnancy-related death among American Indian or Alaska Native persons, accounting for 31.3% of deaths with a known underlying cause (Trost et al., 2022b). Non-Hispanic White people have the second highest rates of pregnancy-associated drug and suicide death. Non-Hispanic Asian and Pacific Islander people, who have the lowest pregnancy-associated death

ratio for both drug-related deaths and homicide, have the third highest ratio for suicide. Pregnancy-associated drug-related deaths are most common among those aged 35 years or older, whereas suicide and homicide are most common among the youngest birthing people (Margerison et al., 2022).

## Suicide Prevention and Treatment

### Screening for Maternal Suicide Risk

Screening has been a recent focal point in maternal mental health (2020 Mom, 2022). In the last decade, most government entities and professional associations have prioritized and endorsed screening for maternal mental health disorders, mainly maternal depression, and anxiety. In February 2023, the Alliance for Innovation on Maternal Health (AIM) issued a safety bundle addressing perinatal mental health. AIM defines patient safety bundles (PSB) as "...collections of evidence-informed best practices, developed by multidisciplinary experts, which address clinically specific conditions in pregnant and postpartum people…[and] includes actionable steps that can be adapted to a variety of facilities and resource levels" (AIM, 2023). The bundle addressed screening maternal suicide stating that when "...concern exists for suicidality due to response in depression screening tool or interaction with patient, further assessment is required. This is done with a clinical interview and can include a suicidality-specific screening instrument" (AIM, 2023).

In June 2023, the US Preventive Services Task Force (USPSTF) issued a recommendation on depression and suicide screening. While screening for depression was recommended for all adults, including pregnant and postpartum persons, the task force concluded that "the current evidence is insufficient to assess the balance of benefits and harms of screening for suicide risk in the adult population, including pregnant and postpartum persons" (USPSTF, 2023). The most commonly used screeners for maternal depression and anxiety are the Patient Health Questionnaire (PHQ 2 or 9), the Generalized Anxiety Disorder screener (GAD 3 or 7), and Edinburgh Pregnancy/Postnatal Depression Scale (EPDS) (2020 Mom, 2022). There is a single question on both the PHQ-9 and EPDS screening tools asking if a person has had suicidal thoughts. While this is a good first step to screening

for suicide risk, having suicidal thoughts does not necessarily mean someone is acutely suicidal or at immediate risk of imminent harm.

### Screening for Suicide Risk—A Critical Step to "Do No Harm"

If a person answers yes to having had suicidal thoughts, then the Columbia-Suicide Severity Rating Scale (C-SSRS) and Suicide Assessment Five-Step Evaluation and Triage (SAFE-T) screeners or the Ask Suicide-Screening Questions (ASQ) Tool should be used to assess for suicide risk (About Zero Suicide, n.d.; Screening tools, 2020 Mom, n.d.). The Patient Safety Screener (PSS) is another screening tool used for identifying patients in the acute care setting who may be at risk of suicide. The PSS-3 can be administered to all patients who come to the acute care setting, not just those presenting psychiatric issues (PSS, n.d.). All of these are prominent evidence-based suicide screening and risk assessment tools that should be used in the perinatal and postpartum period by front-line providers like OB-GYNs.

It is important to note that screening for suicide risk is only one part of the process used to identify suicide risk. If a person is identified as being at risk for suicide, a clinical workflow needs to be followed that all staff are trained in that emphasizes reducing access to lethal means, developing a collaborative safety plan, initiating treatment that targets suicidal thoughts and behaviors directly, and providing caring contacts that include warm hand-offs to skilled providers (Zero Suicide Framework, n.d.). Providers are encouraged to look at Zero Suicide to learn more about effective suicide care.

## Treatment

### Evidence-based Interventions

Historically, clinicians have sought to treat patients with suicidal behavior and thoughts solely by treating their mental health problems (such as depression, anxiety, and substance use disorder). Recent research shows that effective treatment for suicide risk must target suicidal ideation and behaviors specifically through evidence-based models of treatment designed to reduce suicidal behavior or attempts. If other mental health issues are presented, treatment for these mental health issues should also be

administered, not as a treatment for suicide, but as a concurrent treatment (Brown & Jager-Hyman, 2014). Evidence-based intervention and treatment for suicide risk are designed to target suicide risk specifically. The following interventions have been shown to be effective in reducing suicidal thoughts and behaviors:

- Cognitive Behavioral Therapy for Suicide Prevention (CBT-SP) (Stanley et al., 2009)
- Dialectical Behavioral Therapy (DBT) (Linehan et al., 2006)
- Collaborative Assessment and Management of Suicidality (CAMS) (Jobes et al., 2017; Jobes et al., 2005)

## Least Restrictive Care

Recent research has suggested that treatment should be carried out in the least restrictive setting possible for the patient. The clinician needs to be adequately trained to develop an outpatient intervention with an abundance of appropriate support and avoid hospitalization if possible. Currently, the recommended model of care for suicide prevention is called the Stepped Care Model, where patients are "offered numerous opportunities to access and engage in effective treatment, including standard in-person options as well as telephonic, interactive video, web-based, and smartphone interventions" (Ahmedani & Vannoy, 2014). The least restrictive care model also means that treatments tend to be more accessible and cost-efficient. Concerns regarding access to childcare and caretaking responsibilities are a major barrier to suicide care for the perinatal and postpartum population. Thus, the least restrictive care model may offer more reasonable and accessible treatment methods for moms.

## Brief Intervention and Follow-up

Brief interventions are focused on helping the patient increase awareness and insight regarding their behavior and motivate them towards behavioral change. Widely used in substance abuse prevention, generalizing the use of brief interventions in suicide prevention has shown promising outcomes. The Stanley-Brown Safety Plan is a validated brief intervention that is widely used by clinicians to collaboratively mitigate acute suicide risk with a suicidal individual (Stanley-Brown, 2022). The intervention can

be used in most environments and adapted for specific populations (Stanley & Brown, 2011), such as women in the perinatal and postpartum periods.

## Hospitalizations

As psychiatric hospitalizations are increasingly being recognized by the suicide prevention community as an intervention of last resort, respite centers that are usually located in residential facilities are an alternative to hospitalization. Research shows that individuals in crisis may prefer a respite care setting to hospitalization. Respite centers may also employ peer support specialists as staff. Recent pilot training peer support specialists specializing in maternal mental health have garnered significant interest and support for the use of peers with lived experience to support the perinatal and postpartum population. Research shows that respite care may yield better outcomes than acute psychiatric hospitalization (Zero Suicide Framework, n.d.).

Partial hospitalization provides a structured program of outpatient psychiatric services as an alternative to inpatient psychiatric care. The patient receives intensive treatment during the day but does not need to stay overnight. Inpatient hospitalization is the most restrictive and expensive treatment for suicide risk. Most inpatient patients do not receive suicide-specific treatment aimed at reducing suicide attempts and risk after they are discharged.

## The Zero Suicide Framework

As suicide is a complex problem, effective suicide prevention requires a range of interdisciplinary strategies, policies, and interventions. In 2012, the US Surgeon General and the National Action Alliance for Suicide Prevention issued a National Strategy for Suicide Prevention. In this strategy report, a concept known as Zero Suicide was identified as a framework for systemwide transformation towards safer suicide care within the healthcare system (US Department of Health and Human Services [HHS], 2012). Today, the Zero Suicide model (see Figure 3) is considered the gold standard for suicide care in the United States health care system. Recent research has shown that implementation of Zero Suicide reduces suicide in patients (Layman et al., 2021).

**Figure 3**

*Zero Suicide Model*


*Note.* From *Zero Suicide toolkit*, by Zero Suicide. (n.d.) (https://zerosuicide.edc.org/toolkit/zero-suicide-toolkitsm).

**Data Collection on Maternal Suicide in the United States**

Developing a process and method for data collection on maternal suicides has only recently begun in many states. Collecting national data on maternal suicide has been a challenge over the years due to the lack of standardization in measurement, methodology, and definition (Chin et al., 2022). The United States currently does not require states to report maternal suicide rates. In addition, the state-based healthcare infrastructure has caused additional challenges as data collection benchmarks and definitions vary from state to state, and death by suicide may not be reviewed or reported in some states. If a state does review and report data on maternal

suicide, the state may not utilize standardized criteria for independently reviewing and categorizing maternal suicide data.

## Overview of Maternal Mortality Data Collection Methods

### Maternal Mortality Review Committees

To standardize the definitions, methodology, and measurement of maternal mortality in the United States, the Preventing Maternal Deaths Act was passed in 2018 to fund and support state Maternal Mortality Review Committees (MMRCs) (Chin et al., 2022). MMRCs identify, review, and characterize pregnancy-associated deaths and identify prevention opportunities. These committees are multidisciplinary and are formed at the state and sometimes at the city levels. Each committee performs a comprehensive review of maternal deaths during pregnancy and within a year of the end of a pregnancy.

### Pregnancy Mortality Surveillance System

Before the increase in MMRCs due to the passage of The Preventing Maternal Deaths Act, the CDC had conducted national pregnancy-related mortality surveillance using only the Pregnancy Mortality Surveillance System (PMSS). This system relies on the use of death records and defines a pregnancy-related death as the death of a woman while pregnant or within one year postpartum from any cause related to or aggravated by pregnancy.

### Perinatal Quality Collaboratives

Perinatal Quality Collaboratives (PQCs) are state or multistate networks of teams working to improve the quality of care for mothers and babies. Committee members identify healthcare processes that need to be improved and use the best available methods to make changes as quickly as possible.

## Discussion and Recommendations

Suicide has consistently been a complex public health problem within the general US population, with suicide rates on the rise until 2018, when suicide rates modestly dropped for the first time in a decade (CDC, 2020).

Despite the overall drop-in suicide rates, maternal suicidality has tripled over the last decade (Admon et al., 2021). As the maternal healthcare system has only recently begun to look into the epidemiology of maternal suicide, more research is needed to better understand the intricate causes of maternal suicide, and better data collection methods can help close the evidence gap.

As the Zero Suicide framework has been the gold standard for suicide prevention since 2012 and has shown to be effective across various healthcare settings and populations, maternal healthcare settings should begin adopting the Zero Suicide framework to prevent and reduce maternal suicides. As part of the Zero Suicide model to reduce the burden on patients to talk about suicide, clinicians should be adequately trained in suicide prevention-specific strategies to initiate and follow through on discussions about suicide. Research suggests that most providers have little to no training in suicide prevention and care, and most report feeling uncomfortable and unprepared (Zero Suicide Framework, n.d.).

As there are recent reports of a shortage of providers trained in DBT therapy for suicide prevention in adolescents, similar shortages are likely to exist for the adult and maternal populations (Richtel, 2022). Therefore, having more maternal healthcare workers trained in suicide prevention would be beneficial. Clinicians (OB-GYNs, reproductive psychiatrists, maternal-fetal specialists) and non-clinicians (doulas, peer-support specialists, midwives) should receive suicide-specific training appropriate for their level of patient engagement.

As maternal suicides often involve a violent method of death, it may also be beneficial to train clinicians and social services providers on how to counsel on access to lethal means. In addition, professional organizations and associations should develop a recommended pathway for their members to receive suicide-specific training and develop core competencies and recommended best practices for preventing maternal suicide and treating suicide risk in the perinatal and postpartum population. As many national and professional organizations have released depression and anxiety screening recommendations for the perinatal and postpartum population, these recommendations should be amended to include suicide screening recommendations and protocols.

1. Congress and state legislatures should adequately fund state Perinatal Quality Committees (PQCs), the bodies that lead maternal mortality efforts.
2. State PQCs should look at how they can incentivize or hold health systems accountable for the implementation of the Zero Suicide Framework, as well as for the promotion of maternal mental health screening efforts in obstetric settings.
3. The National Committee for Quality Assurance (NCQA) should champion the development of a measure to assess suicide screening in primary care and obstetric settings.

Furthermore, the maternal population should be integrated into mainstream suicide prevention discussions. While many leading suicide prevention organizations and task forces highlight special populations at high risk for suicide, the maternal population has often been overlooked. Including the maternal population as a special risk population in mainstream suicide prevention work can highlight and further the development and recognition of interventions, risk factors, and issues that are unique to preventing maternal suicide.

## Conclusion

Maternal suicide is a tragedy that has rippling societal consequences as well as a lasting impact on families and communities. As public health systems shift to prioritize maternal suicide prevention efforts, research into causes and interventions for maternal suicidality must also be expanded. Efforts to nationally standardize and improve public health data collection initiatives through Maternal Mortality Review Committees (MMRCs) and Perinatal Quality Collaboratives (PQCs) must continue to be bolstered to better understand how to prevent suicides. Maternal healthcare systems should prioritize the integration and adoption of the Zero Suicide framework, and efforts should be made to standardize suicide prevention training and screening protocols within the maternal healthcare system. As new and emerging data continues to affirm maternal suicide as a leading cause of maternal death, the recent momentum and interest surrounding maternal suicide must be leveraged into clinical, systems, and policy shifts that propel actionable change and, ultimately, prevent maternal suicides.

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# Prematurity, Attachment, and Interpersonal Therapy: A Review

Mariana Cerqueira, MD, MA and Tracy Moran Vozar, Ph.D, IMH-E (IV-R)

Medical interventions have improved the lives and well-being of prematurely born infants and their families,however, mental health interventions among these families have yet to become more widely implemented. Approximately 10 % of the population in the United States is born prematurely, with a higher incidence among families of color. Parents of premature babies face several challenges that negatively influence their mental health, their ability to bond with their babies, and ultimately their children's development. In addition to the biological impairment that certain premature babies face, their experience of medical interventions at such a young age increases their caregiving needs. This paper aims to review the literature about caregivers' attachment representation and sensitivity and its impact on caregivers' behaviors and infant attachment. It also overviews effective early interventions emphasizing the caregiver–infant relationship treatment guided by the principles of Infant and Early Childhood Mental Health due

**Mariana Cerqueira, MD, MA,** is a medical graduate from Universidade Nova de Lisboa and has a master's degree in clinical psychology from ISPA-I, a second-year doctoral student at the University of Denver. Specializing in Infant and Early Childhood Mental Health and Substance Use Disorder, she is a fellow on the Colorado OUD/SUD Training program, providing bilingual perinatal, infant, and early childhood mental health services in Colorado. **Tracy Moran Vozar, PhD, IMH-E (IV-R)**, the Clinical Director of Perinatal Behavioral Health at Children's National, oversees perinatal mental health programs and therapy for expectant and postpartum women and their infants. Credentialed through the Division of Psychology and Behavioral Health at Children's National, she is an Associate Professor at George Washington University. Dr. Vozar's research explores perinatal, infant, and early childhood mental health.



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to the reverberating influence of prematurity in the whole family.

*Keywords*: prematurity, NICU, attachment, preterm infant, maternal sensitivity, IPT

Prematurity (i.e., any birth that occurs before 37 weeks of gestation; CDC, 2021) has consequences for infant health and development and emerging attachment relationships. Most premature infants are born just a few weeks short of 37 weeks and usually do not present health difficulties as their organs are fully developed. However, experience shows that as ages decrease further below 37 gestational weeks, a newborn's chances of having medical complications increase. Respiratory difficulties are one of the more common issues. In some cases, premature babies are born before some major organs are fully formed (e.g., the heart), which can be incompatible with viable life.

Parents of premature babies face many challenges that can affect their experience of parenthood, their mental health, and their relationship with their premature infant. In turn, this affects the development of healthy attachment patterns; therefore, mental health assistance is indicated.

In these circumstances, the quality of caregiver and infant attachment patterns can be improved by targeted clinical interventions among parents of premature babies to promote positive changes in the family environment. Interpersonal Therapy (IPT) is proven to be efficient in the treatment of depression (Markowitz et al., 1998; Schulberg et al., 1996) and during peripartum (O'Hara et al., 2000; Spinelli, 1997; Klier et al., 2001; Zlotnick et al., 2001). IPT is a collaborative work between therapist and client, in this case, done with parents of neonatal intensive care unit (NICU) babies, and it has been demonstrated to induce a significant reduction in symptoms, improvement of marital relationships, and reduction of parental stress (Muzik et al., 2009, as cited in Pouyan et al., 2019).

IPT, with a focus on psychoeducation, improves *maternal sensitivity* (Grigoriadis & Ravitz, 2007, as cited in Bleiberg & Markowitz, 2019), significantly reduces stress in the NICU, lessens depression and anxiety at two months corrected age, increases the quality of caregiver-child interactions, and shortens NICU and hospital stays (3.8 days on the Creating Opportunities for Parent Empowerment program), (Melnyk et al., 2006).

Educational-behavioral intervention programs, such as Creating Opportunities for Parent Empowerment, improve child developmental and behavior outcomes by enhancing parent-infant interactions and parent mental health outcomes (Deans et al., 2014).

For this paper, we reviewed articles published until the year 2020. We found that the literature published in the past decade was sparse. Our focus was to better understand the current situation of caregivers and their premature infants in the United States and to identify barriers to attuned caregiving in this population. We reviewed attachment, maternal sensitivity and representations of attachment, and caregiver-preterm baby interactions while exploring the infants' health repercussions of being born prematurely. Furthermore, we investigated the application of IPT as a therapeutic model for this population and how to promote resilience in those families.

## Prematurity

According to the World Health Organization (WHO, 2018), 5 to 18% of babies are born preterm across 184 countries. In 2020, 10% of babies in the US were born prematurely (Center for Disease Control (CDC, 2021), which is about 450,000 babies. More than 80% of these births were unanticipated (Dolezel, 2019). Complications resulting from premature birth are the leading cause of death among children under five years of age, corresponding in 2015 to around 1 million deaths. Cost-effective medical interventions could not prevent only one-third of these cases (WHO, 2018). Dolezel (2019) reported that half of preterm births are idiopathic.

There are three sub-categories of prematurity, defined by the WHO (2018): 1) moderate to late preterm, which is when the birth happens between 32 and 37 weeks of gestation; 2) very preterm, when the birth happens between 28 and 32 weeks; and 3) extremely preterm, when the birth happens before 28 weeks (WHO, 2018). Unborn babies go through important development until the end of pregnancy, including in the final months and weeks. The earlier a baby is born, the higher the risk of health complications and death, which consequently can lead to developmental delay and lower performance in school (CDC, 2021). Preterm birth can be of little consequence with no need for prolonged hospitalization or significant disorder. Only 2% of babies born before 32 weeks gestation account for the majority of neonatal deaths and disabilities (Goldenberg & Rouse, 1998).

The survival rates of premature infants illustrate this. Babies born at 22 weeks have a survival rate of up to 21%, babies born from 23 weeks have a rate of survival of 5% to 46%, and the survival rates of babies born from 24 weeks to 26 weeks range from 40% to 93% (Lorenz, 2001).

Moreover, pregnancy outcomes and infant survival indicate racial disparities (Alexander & Slay, 2002), as the rate of preterm birth in 2020 was 14.4% among non-Hispanic black women, 9.8% among Hispanic women, and 9.1% among non-Hispanic White women (CDC, 2021). According to Mendelson et al. (2017), there is an increased risk of perinatal depression and anxiety for NICU caregivers, with negative implications for caregiving and infant development. More specifically, Black caregivers have a higher prevalence of postpartum depression and anxiety than non-Black caregivers (Howell et al., 2005). It is important to note that maternal mental health issues are frequently underreported in this population, and their symptoms are left unattended (Iturralde et al., 2021; Kozhimannil et al., 2011). Black caregivers are at 50 % higher risk of having a premature baby than White or Hispanic caregivers (CDC, 2022). Matthews et al. (2021) explained that these health inequalities start with perinatal and caregiver mental health disorders diagnosis and access to mental health treatment (Matthews et al., 2021). These inequities can be exacerbated by having a premature infant (Pao et al., 2019).

## Impact of Prematurity

The severity of prematurity and neonatal complications can affect long-term development (Brisch et al., 2005). Rose et al. (2005, 2008) state the negative impact prematurity has on cognitive outcome, which has been consistently corroborated by several studies, demonstrating great variability of cognitive disabilities (e.g., language delays, lower IQs). Several studies have shown that babies born prematurely have a higher incidence of learning disabilities and school failure (e.g., Allen, 2002, as cited in Rose et al., 2005 Amiel-Tison, Allen, Lebrun, & Rogowski, 2002, as cited in Rose et al., 2005; Scottish Low Birthweight Study Group, 1992, as cited in Rose et al., 2005). A longitudinal cohort conducted by Rose and Feldman (1995, 1996, 1997, as cited in Rose et al., 2008) analyzed specific cognitive abilities of 11-year-olds, comparing the abilities of preterm and full-term. They found significantly lower scores in preterm than in full-term

individuals. These results are confirmed by recent MRI studies where prematurity is associated with structural brain abnormalities (e.g., ventricular enlargement and delayed myelination) (e.g., Cooke & Abernethy, 1999; Stewart et al., 1999, as cited in Rose et al., 2005). Some affected brain regions control the deficits found in specific cognitive abilities. For example, memory deficits in school-aged preterm children can be associated with reduced hippocampal volume (Isaacs et al., 2000, as cited in Rose et al., 2008). Several studies point to attention impairments (Hack & Taylor, 2000; Taylor et al., 1998, as cited in Rose et al., 2008) and deficits in executive functioning (Anderson et al., 2004; Curtis et al., 2002, as cited in Rose et al., 2005). Lorenz (2001) states that 20-25% of premature infants have at least one major disability or mental developmental impairment, such as cerebral palsy (12%–15% of survivors affected), blindness (5% to 8%), or deafness (3% to 5%).

## Caregiver-Preterm Baby interactions

Preterm infants differ from full term infants by expressing difficulties interacting with their caregivers (e.g., less alert, poorer motor coordination, and more difficult to comfort and feed) (Field, 1977a, 1977b, as cited in Frodi & Thompson, 1985). The infant's behavior may contribute to the observed behavior of some preterm babies' mothers who are more active and intrusive with their infant, thus having less contingent responses to their infants' cues (Goldberg, 1978, as cited in Frodi & Thompson, 1985). This is particularly important because the baby's tolerance for intense emotions and emotional fluctuation increases with contingent caregiver-infant interactions. Since this type of interaction is decreased with preterm infants, they express more intense distress and get upset easily (Brisch et al., 2005**)** due to having a lower defensive threshold for activating aversive or defensive reactions and a higher threshold for orienting or attentive responses, increasing their emotional lability mirrored by longer recovery time to be soothed (Frodi & Thompson, 1985).

Often, parents of preterm babies feel detached and separated from their infants, as they cannot or do not feel that they can interact as freely with their infants as they would do with a term infant at home (Brisch et al., 2005). Perinatal posttraumatic stress disorder (PPTSD) is a psychological disorder in which an individual experiences a traumatic event in or around

childbirth, usually in the postpartum period in the context of a traumatic birth (Vignato et al., 2017). Caregivers experience the following symptoms: reliving the traumatic event, emotional numbing, hyperarousal, and avoidance of thoughts, places, or persons associated with the event (Foa et al., 2009). PPTSD affects over nine percent of birthing people (Grekin & O'Hara, 2014). Caregivers of premature infants are at a higher risk for PPTSD and anticipatory mourning (Malin et al., 2020). Between 18% and 78% of caregivers of premature infants experience at least one symptom of posttraumatic stress disorder (Malin et al., 2020), which puts these caregivers at risk for depression, prematurity, decreased maternal-infant attachment, and other negative outcomes, such as psychological symptoms later in life (Rogal et al., 2007; Weinreb, 2012). Caregiver PPTSD affects caregiving behaviors and their children's health outcomes (Malin et al., 2020). Even 14 months after delivery, NICU caregiver PPTSD symptoms did not appear to decrease (Kersting et al., 2004). NICU caregivers experience situations of perceived imminent and possible loss of their children, which leads to frequent anticipatory mourning, which consists of "phases mourning, coping, interaction, planning, and psychological reorganization in response to the imminent loss of a loved one" (Coelho et al., 2018, p.2). This adds to the differences in caregiving behavior observed in this population, affecting display and reaction time, and can affect the quality of caregiver-baby interactions and relationships (Brisch et al., 2005**)**. The adult's sensitivity to the baby's emotional cues can be shaped by the preterm infant's emotional responsiveness (Frodi & Thompson, 1985), which impacts the parent-child interaction that is paramount to the infant's development and outcomes and influences the parents' behaviors (Wijnroks, 1999, as cited by Brisch et al., 2005). Interestingly, caregivers of premature infants do not show any difference in parental self-efficacy compared to caregivers of full-term infants, i.e., self-perceived parental competence is similar in caregivers of preterm and full-term infants (Pennell et al., 2012).

## Attachment

### Attachment and Prematurity

The caregiver-child relationship is crucial for their social, emotional, and cognitive development (Wright & Edginton, 2016). Children are

biologically preprogrammed to form attachments with others they depend on for survival. Attachment, defined as the "lasting psychological connectedness between human beings" (Bowlby, 1969, p. 194, as cited in McLeod, 2009; Bowlby, 1978), reflects a deep and enduring emotional bond that connects one person to another across time and space (Ainsworth, 1973; Bowlby, 1969, as cited in McLeod, 2009). Attachment can be adaptive as it can enhance the infant's chance of survival (McLeod, 2009).

Preterm babies, like full-term babies, have a repertoire of behaviors that promote attachment by seeking and maintaining significant caregivers in proximity (Mikulincer et al., 2003). Attachment is built upon how parents comprehend and answer their baby's communication (e.g., crying). Ideally, parents would become a secure base upon which the child builds self-confidence to explore the world (McLeod, 2009). Based upon this, infants create attachment figures and self-working models to be integrated into their personality (Bretherton, 1985), and can buffer anxiety and provide a sense of safety (Mikulincer et al., 2003). Preterm or fullterm infants, understanding that their caregivers will protect them, can take on adventure, explore their environment, and interact with others efficiently (Bowlby, 1988, as cited in Mikulincer et al., 2003). Infants build their internal models of self and others based on the information, individual processes, and feedback they receive from the environment (e.g., Collins & Read, 1994, as cited in Scharfe & Bartholomew, 1994; Main et al., 1985, as cited in Scharfe & Bartholomew, 1994).

The quality of child-caregiver attachment has been proven to be moderately stable (Scharfe & Bartholomew, 1994). The same has also been demonstrated in adults in a variety of longitudinal studies (e.g., Hammond & Fletcher, 1991, as cited in Scharfe & Bartholomew, 1994; Shaver & Brennan, 1992, as cited in Scharfe & Bartholomew, 1994). Furthermore, changes in the family environment (e.g., mother's return to work) are associated with changes in children's attachment categories. Thus, for infants in high-risk environments, the stability of attachment patterns is lower (Scharfe & Bartholomew, 1994).

## Types of Attachment Patterns

Children can be categorized into three attachment types: secure, anxious avoidant, and anxious resistant (Mikulincer et al., 2003; Mallinckrodt et al.,

1995). Infants with a secure attachment will explore their environment freely in the presence of their mother. They demonstrate some anxiety upon separation but are easily comforted upon reunion. Infants with an anxious ambivalent pattern of attachment tend to be excessively anxious, angry, and clinging to their caregiver, limiting their ability to explore their environment. They feel distressed during separation and express difficulty in being comforted upon reunion. Infants with an anxious-avoidant attachment style demonstrate little interest in their caregiver and have a flatter affect. Inconsistent caregiver responses to infant cues promote an ambivalent attachment pattern, whereas consistent emotional unavailability and unresponsiveness from caregivers can lead to avoidant attachment styles (Mallinckrodt et al., 1995).

Caregivers' attachment patterns affect how they respond to their baby's cues; therefore, these patterns permeate the quality of caregiver-preterm baby interaction and subsequently influence the baby's development of attachment patterns. These relationships are more challenging with a preterm baby than with a fullterm healthy baby due to their baby's idiosyncrasies, which stress the caregiver-baby dyad and the caregiver's parenting skills. Preterm babies might develop different patterns than fullterm, which might shift according to changes in their family environment (Scharfe & Bartholomew, 1994).

## Attachment and Health Outcomes

Optimal functioning is facilitated by contingent and synchronous child-caregiver interactions in which the caregiver is available to their child in times of need and responds appropriately to their needs (Bowlby, 1973, as cited in Mikulincer et al., 2003). Consequently, the child expects others to be available to them and develops a positive sense of self, healthier self-esteem, and feels competent and valued, which organizes their major affect-regulation strategies. In contrast, children who develop insecure attachment patterns learn that their caregivers are unavailable or unresponsive to their needs, and therefore, closeness to the caregiver does not soothe them, and they do not feel safe. This leads to negative representations of self and others, so they seek to affect regulation strategies that do not evolve the proximity of others (Mikulincer et al., 2003).

Insecure attachment patterns and attachment disorders are associated with poor long-term outcomes (e.g., educational, social, and physical) and subsequent psychopathology, which points to the clinical importance of promoting healthy attachments (Wright & Edginton, 2016). Behrens et al. (2016) state that it has been well documented (e.g., van Ijzendoorn, 1995, as cited in Behrens et al., 2016) that attachment security can be transmitted intergenerationally. How children's attachment needs are attended to–caregiver sensitivity–is a central aspect of this transmission. Caregivers with a secure attachment pattern will be more sensitive to their children's needs, responding appropriately and synchronously, unlike those with insecure attachment patterns who portray lower maternal sensitivity (Brisch et al., 2005). These caregivers prioritize relationships and tend to be more thoughtful and reflective (Main et al., 2003), thus having more securely attached infants (Brisch et al., 2005).

## Maternal Sensitivity and the Representation of Attachment

The caregiver's appropriate responsiveness and sensitivity toward the infant's cues and needs (maternal sensitivity) has a great impact on the quality of the infant's attachment to their caregiver, which also reflects the quality of early interactions (Ainsworth, 1979, as cited in Borghini et al., 2006). It has been well established that mothers of preterm infants display less positive affect and more anxiety toward their infants than mothers of term infants (Brisch et al., 2005). Preterm infant mothers show enhanced stimulation and activity levels (Borghini et al., 2006). Parents often experience their baby's premature birth as traumatic, associated with perceived life-threatening circumstances, with consequent parental anxiety translated into an overprotective parenting style (Affleck et al., 1991). The caregiver's attention is affected in function to the severity of neonatal medical problems (Beckwith and Cohen, 1978, as cited in Borghini et al., 2006). It has also been found that preterm infants smile less and are fussier than their age-matched controls (Brachfeld et al., 1980; Barnard et al., 1984, as cited in Borghini et al., 2006).

Parental perceptions and attitudes can distort early caregiver-child interactions. The latter is rooted in parents' experiences of their child's premature birth, which impacts the caregiver-child relationship even after the neonatal challenges have been resolved. This can explain the higher

incidence of behavioral and social problems in infants and children born prematurely (Borghini et al., 2006).

Mothers of full term babies have more secure attachment representations (53% at six months and 57% at 18 months) than mothers of preterm babies (20% at six months and 30% at 18 months) (Borghini et al., 2006). Mothers of premature infants demonstrate the same percentage of secure attachment representations independently of their baby's level of postnatal risk. In contrast, insecure attachment representation differs according to their babies' postnatal risk. Low-risk premature infant mothers present more disengaged representations, whereas high-risk premature infant mothers exhibit more distorted representations (Borghini et al., 2006). Mothers of low-risk premature infants tend to be emotionally distant, not knowing their infant well and not acknowledging their infant's needs for dependency and connection. This type of representation implies emotional withdrawal, which differs from distorted representations, which are more prevalent in mothers of high-risk premature infants, where emotional arousal is central. Several months after discharge, this emotional arousal often persists. Parents with this type of representation feel a strong need to be close to their children so that they can provide strength and comfort during stressful and painful medical experiences. They express anxiety and concern about their child's health and future development.

In contrast, low-risk parents mention low to no concern about their children (Endriga & Speltz, 1997). This is corroborated by a higher incidence of secure attachment representations in high-risk infants (42%) compared to low-risk infants (17%) at 18 months of age. It appears that the stress, anxiety, and consequent emotional difficulties endured by parents of high-risk infants prepare them for a higher level of closeness with their children. When mental health support has been provided, these parents feel more confident in their child's development, thus having optimal involvement with them (Borghini et al., 2006).

Borghini et al. (2006) postulated that in the first months following the infant's discharge, disengaged representations may lead to difficulties in establishing a close relationship and to long-term negative effects on the caregiver-infant relationship development, and this, consequently, promotes difficulties in infants in recognizing their needs.

## Attachment in Preterm and Term Infants

Many studies have attempted to determine preterm infant attachment styles. These studies are inconclusive. Some authors (Brown & Bakeman, 1980, as cited in Borghini et al., 2006; Frodi & Thompson, 1985; Easterbrooks, 1989, as cited in Borghini et al., 2006) have not found a higher incidence of insecure attachment patterns. Goldberg, Perrotta, Minde, & Corter (1986) and Wille (1991, as cited in Borghini et al., 2006) explain this finding by the parents' ability to adapt to their preterm infants' special needs, thus arguing that the quality of the attachment relationship is not influenced by prematurity. Frodi and Thompson (1985) corroborated this by affirming that affective expression and regulation, and security of attachment are the same between term and preterm infants at 14 months and 19 months (Mangelsdorf et al., 1996), demonstrating a lack of significant differences in the quality of attachment between term and preterm infants.

In contrast, Plunkett et al. (1988, as cited in Brisch et al., 2005) found a higher percentage of insecure attachment patterns in preterm infants, especially in infants with a high medical risk score compared to infants with a low-risk score. This is also confirmed by Brisch et al. (2005), who state that less secure attachment styles were found in preterm infants compared with term infants. Prematurity in and of itself does not constitute a higher risk of insecure attachment.

## Interpersonal Therapy

Interpersonal Therapy (IPT) is an effective psychotherapy method supported by numerous empirical studies. It uses a biopsychosocial/cultural/spiritual model to assess personal strengths and vulnerabilities, target symptom resolution, increase social support, and improve interpersonal functioning. This is time-limited psychotherapy, with a range of 12-16 sessions, focused on interpersonal crises (International Society of Interpersonal Therapy (ISIPT), n. d.).

## IPT—Clinical Intervention Focused on Caregiver-Child Relationship

The quantity or quality of the mother-infant interaction can be affected by changes in the family environment, such as numerous stressful or positive life events that facilitate changes in attachment patterns (Thompson

et al., 1982). The socioemotional functioning of preterm infants can be improved by the caregiver's adaptation to the characteristics of premature babies and by establishing a more harmonious and appropriate interaction style (Frodi & Thompson, 1985).

Various interventions, most commonly parenting interventions, are used to address insecurity or attachment patterns and attachment disorders (Wright & Edginton, 2016). Becoming a mother and accepting the transition to this role is more difficult for mothers of premature infants (Pouyan et al., 2019). Studies have shown an improvement in maternal mental health with IPT (Deans et al., 2015), which helps by improving an individual's stressful behaviors, improving mother-child attachment, and facilitating the adoption of their new maternal role (Deans et al., 2014).

IPT is an efficacious therapy in the treatment of depression (Schulberg et al., 1996; Markowitz et al., 1998) during peripartum (O'Hara et al., 2000; Spinelli, 1997; Zlotnick et al., 2001; Klier et al., 2001) in adolescents (Mufson et al., 1999), and geriatric individuals (Reynolds et al., 1999, as cited in Markowitz & Weissman, 2004), which makes a non-causal connection between an individual's mood and distressful life events. IPT has also been proven efficient for non-mood disorders and other conditions, such as social phobia (Markowitz & Weissman, 2004), posttraumatic stress disorder (Krupnick et al., 2002), and anxiety disorders (Agras et al., 2000, as cited in Markowitz & Weissman; Fairburn et al., 1995, as cited in Markowitz & Weissman, 2004;, 2004; Wilfley et al., 2002 as cited in Markowitz & Weissman, 2004). It is collaborative work between therapist and client to resolve a problem by activating several mechanisms of interpersonal change, such as decreasing interpersonal stress, increasing social support, facilitating emotional processing, and improving interpersonal skills (Lipsitz & Markowitz, 2014).

IPT done with parents of babies who were hospitalized in a NICU shows a significant reduction in symptoms, improvement of marital relationships, and reduction in parental stress (Fuzik et al., 2009, as cited in Pouyan et al., 2019).

## IPT as a Psychoeducational Program

IPT with a focus on the psychoeducation component has been shown to significantly reduce stress in the NICU, lessen depression and anxiety at two

months corrected age, increase the quality of caregiver-child interactions, and shorten NICU and hospital stays (3.8 days on the Creating Opportunities for Parent Empowerment program) (Melnyk et al., 2006). Educational-behavioral intervention programs, such as Creating Opportunities for Parent Empowerment, improve child developmental and behavior outcomes by enhancing parent-infant interactions and parent mental health outcomes (Deans et al., 2014).

The *maternal sensitivity* framework influenced the work of Grigoriadis and Ravitz (2007, as cited in Bleiberg & Markowitz, 2019), who noticed improvements in maternal perception and interpretation of their baby's emotional cues (i.e., joy, comfort, guidance, room for exploration), resulting in a more synchronous maternal response to signals.

Early parenting interventions, such as an educational-behavioral intervention program, starting in the NICU, can be extremely impactful for these parents because they can improve parents' mental health, raise the quality of caregiver-child interactions, and decrease hospital stay duration (Clark et al., 2003, as cited in Robertson et al., 2004). This is accomplished by facilitating the acquisition of developmentally appropriate, non-intrusive, and consistently clear communication with the preterm child. It is beneficial to add attachment-based principles to this intervention (Grigoriadis & Ravitz, 2007, as cited in Bleiberg & Markowitz, 2019). Gunlicks-Stoessel et al. (2017), in their work with adolescents (IPT-A), found it effective in attending to attachment pattern problems and decreasing attachment anxiety and avoidance while reducing depression symptoms.

## Building Resiliency

The Benevolent Childhood Experiences scale (BCE; Narayan et al., 2018) is a self-report measure with ten items that measure perceived safety, security, support, and positive and predictable qualities of life. It is designed to quantify positive early life experiences (Karatzias et al., 2020) and predict lower levels of psychopathology and stress (Merrick et al., 2020). The recollection of and reasoning about pregnant women's own childhood experiences (Slade et al., 2009, as cited in Merrick et al., 2020) and childhood family environments and social contexts will become models and resources for their circumstances during their perinatal period (Merrick et al., 2020; Narayan et al., 2018), from which they draw as caregiving

templates and will promote resilience and more positive caregiving for multiple generations (Narayan et al., 2018). Individuals should be encouraged to reflect on the benefits of Angel Memories (memories of intense shared affect between caregivers and child, eliciting feelings of being understood, accepted, and loved) to promote positive parenting and adulthood well-being. This could positively impact maternal sensitivity, caregiver-child interactions, and healthy attachment behavior. For BCE and Angel Memories to have protective effects across generations, clinicians would benefit from unlocking the ability to recall Angel Memories created by severe Ghost Memories (Lieberman et al., 2015; Narayan et al., 2016) by focusing on trauma-informed treatment, such as child-parent psychotherapy (CPP) to facilitate a client's process of unresolved trauma, promote resilience during pregnancy, and support mother-infant bonding (Narayan et al., 2018). Both Angels and Ghosts, as opposite polarities of their experiences with their caregivers, coexist in a dynamic relationship and affect an individual's adaptation to their environment.

## Clinical Implications and Future Research Potential

Mental health in adulthood can be protected through early interventions that introduce positive childhood experiences and resources to children and adolescents (Karatzias et al., 2020). To that end, "a first step in resilience-informed clinical perinatal health services is to bring individuals' conscious awareness to resources that might already be in place, such as the loving, supportive, and predictable BCEs that become Angel Memories and serve as templates for positive caregiving in the next generation" (Narayan et al., 2020, p.130).

Early intervention with caregivers focusing on maternal sensitivity is clinically effective in promoting secure attachment in children. Clinicians must carefully consider not only their choice of intervention but also the match between their chosen intervention and the characteristics of the parents, caregivers, and children with whom they wish to use it.

IPT efficiency has been demonstrated in many areas, although it has yet to be studied regarding its impact on children's mental health and development (Deans et al., 2014, 2015). More specifically, the caregivers-premature infant relationship faces many unique challenges that can hinder a child's attachment patterns and general development. It is

important to realize high-quality intervention research, especially on children under five years of age with attachment disorders and those with disorganized attachment (Wright & Edginton, 2016), and on children born prematurely.

It is pertinent to investigate BCE's possible impact on parenting styles, parenting self-efficacy, preterm infants and their parents' resiliency, maternal sensitivity, and attachment patterns. Particularly among caregivers of premature babies and their infants, it is crucial to understand factors (e.g., individual, family, and community) that can offset the deleterious effects of prematurity (Narayan, 2015, as cited in Narayan et al., 2018). To that end, we need to develop efficient and empirical instruments and strategies to counter the negative impact of adverse experiences and promote favorable early experiences for high-risk populations, such as premature babies and their caregivers. Furthermore, it could be beneficial to study the implications of using the BCEs scale as a resilience-based perinatal screening and how improving the postnatal environment affects premature infant development and attachment patterns (Narayan et al., 2018).

Finally, the impact of IPT on caregivers of premature babies with a focus on trauma-informed treatment and building resilience by promoting BCE and Angel Memories should be studied to establish its possible influence on maternal sensitivity and quality of caregiver-infant interactions and child attachment and development.

## Conclusion

This paper explored the value of early clinical interventions with premature infant caregivers. Premature birth can negatively impact infants, caregivers, and the relationships they establish. With premature babies, even the smallest caregiving tasks can be challenging and thus negatively affect one's experience of parenting their child. Holding a baby can be a very difficult and scary accomplishment for a parent, depending on the medical equipment to which the baby can be connected, and sometimes holding or even touching is not possible with some NICU preterm setups. In addition to the parents needing to adjust their caregiving behaviors, they have to cope with their grievance of not having a healthy baby.

Caregivers of premature babies might live with the shadow of impending medical complications or even death, depending on the severity

of their baby's health complications. Understandably, these factors affect one's perceptions of their newborn and relationship. Caregivers' defensive mechanisms, their Angels or Ghosts in the nursery, early childhood memories (benevolent or adverse), and coping mechanisms shape how they address their babies' special needs and influence the relationship they establish with their infant. Premature babies experience several degrees of medical interventions, often with invasive touch. Their sensorial experiences are often very different from those of full term babies. Premature infants' sensorial experiences can limit their ability to be held by their parents or skew their behavior toward increased emotional lability or sensitivity, affecting their caretakers' sensitivity and self-efficacy. How the relationship is established and maintained has long-lasting effects throughout adulthood.

IPT is a clinical approach that can improve caregiver-infant relationships and positively impact infants' attachment patterns and long-term outcomes (e.g., educational, social, physical, and psychological). In addition to reducing clinical risk, clinicians can enhance premature infants' well-being, development, and mental health by promoting resiliency in their caregivers and consequently improving outcomes for multiple generations. By improving caretakers' mental health and promoting the development of resiliency and coping skills, clinicians are enhancing parental sensitivity to their infants' needs and cues as it increases intimacy and closeness in the parent-child relationship. This creates a sense of safety and protection in these premature infants, facilitating more secure attachments.

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# Reducing the Maternal Mortality Rate in the United States Through the Midwives Model of Care

Jess Kimball, PMH-C, CLC

The United States does not follow the Midwives Model of Care like many other countries. The contrast of the model of care in the United States to other developed countries is a main contributor to the higher maternal mortality rate, which disproportionately affects people of color. The main factors contributing to the high maternal mortality rate in the United States are the lack of continued postpartum care, in-depth prenatal visits, and improper parental leave policies. A standard of care that includes continuous labor support, more and longer appointments, emotional and physical support, new parent education, and cultural competency has been shown to result in better outcomes for the birthing person and the baby. This article explains why the Midwives Model of Care fits the criteria for the desired style of care needed to reduce maternal mortality in the United States.

*Keywords:* maternal mortality, midwifery, midwives model of care, United States, health care

**Jess Kimball, PMH-C, CLC** is a birth and postpartum doula, infant sleep consultant, and certified lactation counselor currently studying psychological science at Vermont State University. She is trained in Ayurvedic and Chinese medicine, holds a PMH-C from Postpartum Support International, and is trained in EFT tapping and Reiki I and II. Jess produced the documentary *The Vermont Birth Experience* and is also the managing editor of *JOPPPAH*. Jess Kimball can be reached at JessKimballWellness@gmail.com



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## Midwifery as a Method to Reduce Maternal Mortality in the United States

The United States is one of few developed countries that does not standardize midwifery care for low-risk pregnant patients and does not provide continued care throughout their lifetime. It is not customary for a family to consult a midwife rather than a physician. The United States has standardized the practice of care by physicians for low and high-risk patients, the medical model of care. However, the midwifery model of care is used in developed countries like the Netherlands and Canada. Both countries have significantly lower rates of maternal mortality than the United States. This correlation can be noticed between many developed countries following the midwifery model of care and the United States, where most babies are delivered by obstetricians (Central Intelligence Agency, n.d.). The divide between types of midwives was an accident of history. However, the introduction of the medical model of care was no accident. Doctors pushed their way into the birthing room and declared war on traditional midwifery (Brodsky, 2008).

The United States maternal mortality rate is the highest of any developed country. According to the Centers for Disease Control and Prevention, "[t]he maternal death ratio for Black women (37.1 per 100,000 pregnancies) is 2.5 times the ratio for white women" (Declerq, 2020). In 2020, the maternal mortality rate for Black people was 55 out of every 100,000 births. The rate is actively increasing. Between 2019 and 2022, the maternal mortality rate for all birthing patients nationwide rose by 37%, according to the Kaiser Family Foundation.

When looking at the attendants of births in the United States, we get an idea about how much greater the rates of physician-attended births are over midwife-attended births. Figure 1 shows the United States births by attendant in 2020.

**Figure 1**

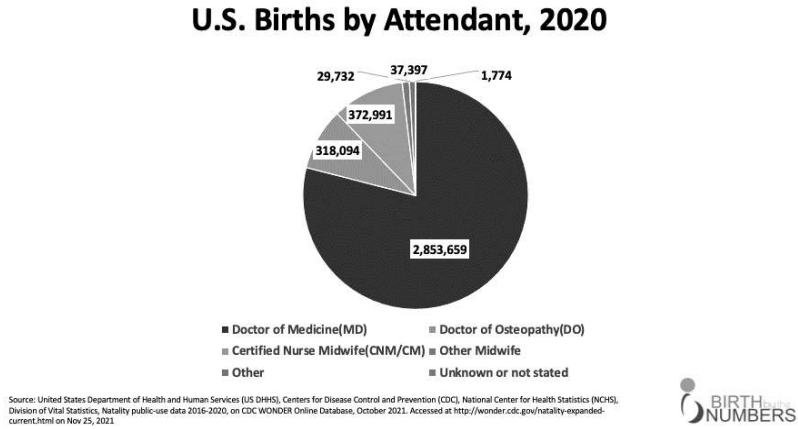
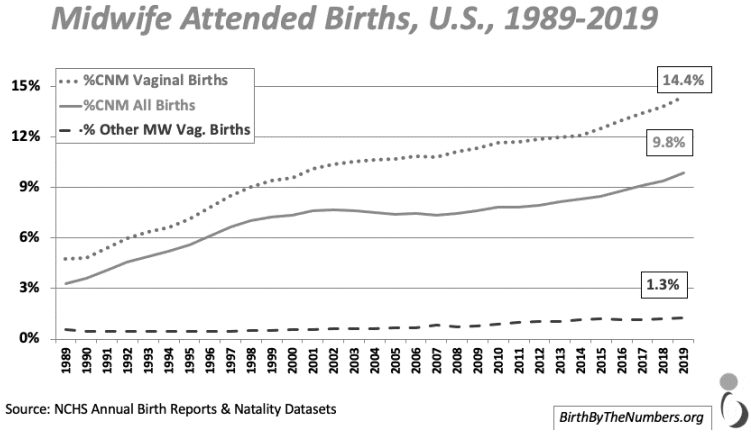



**Figure 2**




Physicians attended most births in 2020, but as seen in Figure 2 above, the rate of midwife-attended births is slowly rising. These statistics do not account for certified professional midwives (CPM) attending births, which are also on the rise. Unfortunately, CPMs can only be legally practiced in 36 out of the 50 states (NACPM, n.d.). These restrictions impact the maternal mortality rate by limiting access to care. The United States of America is one of the only countries with restrictions around midwifery licensure and

one of few countries that treat types of midwives differently or offer different types of licensure paths.

## Discussion

### The Midwives Model of Care

The midwifery model of care is client centered. Providers are focused on monitoring the physical, psychological, and social well-being of the mother/birthing parent throughout the childbearing cycle, providing the birthing parent with individualized education, counseling, prenatal care, continuous hands-on assistance during labor and delivery, and postpartum support, minimizing technological interventions, and identifying and referring birthing people who require obstetrical attention (MANA, 2021). Worldwide, 80% of people alive today are delivered by midwives, and midwives have been present at 70% of all births; this model of care works well in any setting (MANA, 2021). When discussing the care model midwives abide by, the World Health Organization (WHO) has stated that "…it could avert more than 80% of all maternal deaths, stillbirths, and neonatal deaths" (WHO, 2020).

Midwives can educate patients on safe sex and family planning, administer vaccines, and deliver babies. They provide affordable, practical care that could reduce maternal deaths by 22% (Nove et al., 2021). The reason why families may not choose midwifery care is not just a lack of trained midwives but a lack of investment from government officials and a lack of support for the midwifery care model (Kikwete & Saraki, 2017). There is also a lack of understanding of what a midwife is. Many are unaware of the care midwives can provide throughout a person's life.

A midwife, if they are a certified nurse midwife, can prescribe birth control, offer abortion care, prescribe fertility medication, treat sexually transmitted diseases, and even prescribe anti-depressants or thyroid medication. Depending on state regulations, all types of midwives can offer intrauterine insemination, fertility treatment, pap smears, sexually transmitted disease testing, and other wellness care methods. Depending on the state, licensed non-nurse midwives can also prescribe birth control.

The midwives' model of care has a focus on continued care. There are more prenatal and postpartum visits in this model of care than in the medical

model of care. This is important because "only a third of pregnancy-related deaths occur at the time of birth" (Declercq & Zephyrin, 2020). There is a need for more visits to help identify a problem before it can lead to a fatal outcome. The scope of a midwife includes preventative measures, promotion of normal birth, detection of complications in birthing parent and baby, access to medical care or appropriate assistance, and the carrying out of emergency, according to the International Confederation of Midwives (International Confederation of Midwives, n.d.).

In addition to a continued care approach, midwives are known for holding space for clients and offering continuous hands-on support. Many midwives give the hands-on type of support doulas are known for providing. This is more common in small or well-staffed practices because there is a high enough provider-to-patient ratio that midwives can stay in the room with the birthing person to offer emotional and physical support and medical support. This could include affirmations, counter-pressure and massage therapy, and aromatherapy.

## Provider Shortages

This type of support offers patients relief because they know someone is there if they need anything. The United States has a major shortage of both midwives and OB-GYNs. A better work-life balance could reduce burnout in these fields and increase the number of providers, allowing for more hands-on labor support. On-call careers often experience burnout, especially private practice midwives without scheduled on-call shifts.

## Postpartum Support

When discussing the United States rising maternal mortality rate, Neel Shah of Harvard School of Medicine said, "[postpartum parents] struggle with rapidly accelerated responsibilities, extreme sleep deprivation, and relentless pressure to return to work" (Shah, 2018). This can lead to higher rates of perinatal mood and anxiety disorders, increasing the risk of postpartum suicide, a common cause of maternal mortality (Chin et al., 2022). He also stated, "Four out of five of these deaths happen in the weeks and months before or after birth" (Shah, 2018). Studies show that 52% of deaths occur during the postnatal period.

Many private practice midwives do home visits for patients. This allows them to see the client's home and identify risk factors such as mold, bugs, rodents, or unsafe stairs. Support can then be put in place to help avoid fatality influenced by these risk factors for both the birthing person and the baby. Home visits also reduce the physical strain on the postpartum body. The Commonwealth Fund published a piece stating, "Although a large share of its maternal deaths occur postbirth, the United States is the only country not to guarantee access to provider home visits or paid parental leave in the postpartum period." (Tikkanen et al., 2020). Many birthing people do not have a partner who is still on parental leave during their six-week visit. They may have to bring their infant and toddler to an appointment. Whether they are bringing just their baby or other children, they have to do heavy lifting in both situations when heavy lifting postpartum is not recommended. A midwife doing home visits would help avoid such situations. The birthing person will be less stressed if they avoid the arrangement of a babysitter or someone to drive them to the appointment (if they are not cleared to drive). The need for community-based and midwifery support is even more acute for someone with a cesarean section. Depending on the practice, a patient may still qualify for some midwifery care postpartum even if their birth ends in a cesarean section.

Recently, Walmart announced coverage of doula care for employees in four states. Doulas can provide continuous care throughout labor like midwives typically do (Buxton, 2022). When Walmart began covering doula services, they chose states where the impact on maternal mortality would be immediate. For example, they chose Indiana, where 33 counties do not have OB-GYN services. Doula care can benefit individuals in those counties, but this state could benefit greatly from increased midwifery care because midwives are a great fit for rural communities where patients may not live near a hospital or medical office. Instead, the midwives can travel to patients' homes.

Adequate postpartum care also extends to proper education for new parents on biologically normal infant behavior, such as infant cues and development. Preparing parents for what to expect reduces stress over the baby's behavior (Lindsay & Totsika, 2017). Most midwifery practices offer new parent education or will refer patients to those who do. If they do not offer classes, many of the questions parents may have are discussed in their visits because longer appointments allow time for questions.

The support offered by midwives is individualized. It is tailored to meet the family's needs because the midwife forms a relationship with the patient. The charting and notes a midwife may transfer to another provider are much more in-depth. The appointments typically are an hour long with a midwife versus the average appointment time for a physician of 30-45 minutes, 15 of which are spent face-to-face with the patient. Midwives form a trust-based relationship with patients where patients feel comfortable disclosing information with the provider. The provider's ability to get to know the patient through this model of care makes it easier to identify problems and find solutions because midwives see the whole picture.

**Baby-Friendly Hospital Initiative**

The baby-friendly hospital initiative invites providers to shift their mindset and commit to providing the safest and most physiologically accurate birth experience. The focus falls mainly on the immediate postpartum, but this is a great initiative for hospitals attempting to transition to a model closer to the Midwives Model of Care. In baby-friendly hospitals, evidence-based care is provided, education is free from commercial interests, all infant feeding options are possible, and individual preferences are respected (WHO, n.d.).

According to the WHO (n.d.), the model follows these ten steps:

1. Comply fully with the International Code of Marketing of Breast-milk Substitutes and relevant World Health Assembly resolutions.
    a. Have a written infant feeding policy routinely communicated to staff and parents.
    b. Establish ongoing monitoring and data-management systems.
2. Ensure that staff have sufficient knowledge, competence, and skills to support breastfeeding.
3. Discuss the importance and management of breastfeeding with pregnant women and their families.
4. Facilitate immediate and uninterrupted skin-to-skin contact and support mothers to initiate breastfeeding as soon as possible after birth.

5. Support mothers to initiate and maintain breastfeeding and manage common difficulties.
6. Unless medically indicated, do not provide breastfed newborns any food or fluids other than breast milk.
7. Enable mothers and their infants to remain together and practice rooming-in 24 hours daily.
8. Support mothers to recognize and respond to their infants' cues for feeding.
9. Counsel mothers on the use and risks of feeding bottles, artificial nipples (teats), and pacifiers.
10. Coordinate discharge so parents and their infants have timely access to ongoing support and care.

## Conclusion

Following the Midwives Model of Care instead of the medical model of care for low-risk patients can reduce the maternal mortality rate. The model of care used by midwives includes individualized, personalized, client-centered care. It allows providers to attend births that a physician may not be able to get to and serve patients who may not be able to access transportation to a hospital, for example, in rural areas where a hospital may be a two-hour drive or longer. The Midwives Model of Care has been proven to improve birth outcomes and lower maternal mortality. Providers can start by increasing appointment frequency and length, following the baby-friendly hospital initiative, and completing cultural competency training to reduce disparities if this model of care cannot fully be implemented in their practice. When possible, the Midwives Model of Care should be the standard practice.

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# The Prenatal Origin of Myth, Religion, and Ritual

John Bonaduce, PhD

It has been a century since Otto Rank boldly broke away from Freudian orthodoxy and declared that babies at birth are sentient and highly impressionable human beings. Since then, evidence for embryonic consciousness has been firmly established with data from neuroscience, biology, psychiatry, and medicine, always tending to earlier prenatal awareness models. Some have even made the case that we remember our intrauterine lives back to existence as a single fertilized cell. And yet, the methods by which we measure and assess the emotional universe that precedes birth are limited. Mythobiogenesis, a theory developed by the author, draws on the insights of prenatal pioneers in order to open a true window into the womb. That window, not so surprisingly, is mythology, inclusive of fairy tales, sacred scripture, religious belief, and ritual. Donnalt Winnicott put it economically, "Mythology may be the key to our embryological experience." Following Winnicott's intuition, Mythobiogenesis asserts that much of what we call mythology, fairy tales, and even sacred scripture derives from a fundamental impulse to tell the universal intrauterine

**John Bonaduce, PhD**, a seasoned writer for major Hollywood studios such as Fox, Paramount, and Warner Bros, developed a profound interest in story structure. Beyond the commercial objectives of the industry, his exploration led him to the belief that stories have a biological origin. This insight inspired his pursuit of deeper context through his theory of Mythobiogenesis, which he explored in his dissertation at Pacifica Graduate Institute. As a featured writer for the Joseph Campbell Foundation's MythBlast, he passionately showcases Joseph Campbell's enduring relevance to a modern, socially progressive audience. Correspondence concerning this article should be addressed to John J. Bonaduce, 12437 Sylvan St., No. Hollywood, CA 91606 – jbonaduce52@gmail.com



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experience of life before birth in culturally specific ways. We remember conception. We tell of it in our stories. In this article, we explore the biblical narrative of Noah, correlating each story point with those found in other traditions, leading to the conclusion that Noah and his ark are nothing more, nor less, than a single fertilized cell floating toward implantation.

*Keywords:* Mythobiogenesis, Noah, mitosis, gastrulation, implantation

## The Prenatal Origin of Myth, Religion, and Ritual

Researchers in prenatal and perinatal psychology have become increasingly confident since Otto Rank first suggested that babies remember birth. One hundred years later, Rank's assertion seems more of an understatement. Research has firmly established that the preborn enjoys a complex mental life and that memories of intrauterine existence arise *before* birth, brain formation, neurons, organogenesis, gastrulation, cell proliferation, or even cell cleavage. Some suggest that "cells remember their origins, all the way back to conception" (Verny, 2021, p. 73). If such memory exists, how would it be expressed?

## Mythobiogenesis

Much of what we call mythology, fairy tales, and even sacred scripture derives from a fundamental impulse to tell in culturally specific ways the universal intrauterine experience of life before birth in a process I call Mythobiogenesis. D.W. Winnicott frequently proposed the idea of a biologically driven narrative according to this protégé R.D. Laing, who famously asked, "Is it possible for we cells to record experience before specifically neural tissue arises and to reproduce in later phases of the life cycle transforms, or variations, of such first experiences?*"* (Laing, 1976, p. 31).

Laing was particularly impressed with the parallels between conception in the fallopian tube and birth-of-the-hero stories: Sargon was "brought forth in a hidden place" (conception in the uterine tube) . . . whereupon his mother

laid him "in a vessel made of reeds…" covered in pitch (zona pellucida, per Laing) and dropped "down into the river" which "carried him to Akki the water carrier who lifted him up in the kindness of his heart"—which Laing equates with, in his words, "adoption by endometrium" (p. 34). The theme is echoed by the Biblical account of Moses, likewise, placed in a basket (again, the zona pellucida), floating downstream just as the blastocyst floats for some seven days before its harrowing approach to the endometrium. Failure to implant is, of course, a common cause of spontaneous abortion, a high point in intrauterine drama.

Apply Laing's bold correlations to the story of Noah and his ark and discover apparent references to elements of the reproductive process not enumerated by Winnicott or Laing but strongly supporting their ideas.

## Noah and the Zona Pellucida

Details in Biblical stories, like the details in the dreams of a troubled analysand, are important for the same reasons. They are signifiers of a veiled yet relatable reality. Consider that God tells Noah to cover his ark in pitch, just as Moses, Sargon, and Karne were carried downstream in pitch or wax-covered baskets.

God says, "Make yourself an ark of gopher wood, make it an ark with compartments, and cover it inside and out with pitch" (*The Jewish Study Bible,* Berlin, 2014, Genesis 6:14). Laing recognizes this as a reference to the zona pellucida, as do I, that water-hating or hydrophobic lipid serving, among other functions, to keep out the competition. Thus, polyspermy is prevented by consigning millions of male gametes to annihilation in a sea of female acids, others lost in the convolutions of plicae in the ampulla, others doomed by choice of the wrong fallopian tube or who somehow were left behind when the great cervical gate closed without giving them a chance. These are the elements of a naturally occurring, unwitnessed apocalypse. Unwitnessed, yet made visible in our scriptures.

## Zona Pellucida: The Reality Behind the Metaphor

According to the simple principles of Mythobiogenesis, the prenatal stages of embryology generate corresponding metaphors expressed as sacred and secular narratives. Frequently, the reality behind the screen image is

none other than the zona pellucida. For example, in the second book of the Pentateuch (the first five books of the Hebrew scriptures), we encounter the famous Ark of the Covenant, a golden treasure chest, whose dimensions were stipulated by God. In terms of Mythobiogenesis, it is also the zygote encased in its lipid barrier, or zona pellucida. While the Egyptian pursuers drown pitifully in the Red Sea—the manifest plot point evoked by the latent functioning of the cervix itself—the ark is carried on wooden poles across the unforgiving desert en route to the Promised Land in imitation of the zygote/morula/blastocyst on its precarious journey to the endometrium. Appropriately, there are two tablets within the ark, just as there are two parental homologous within the fertilized cell (Britannica, 2023, p. 28).

The pursuing Egyptians have more in common with their quarry than they imagine. Their myths include unmistakable counterparts to the zona pellucida. Plutarch's (1936) account of the Egyptian origin tale resonates with the idea of a free-floating ovum heading for a rendezvous with its male counterpart. In this allusion to the zona pellucida, Osiris is tricked into entering a coffin, whereupon seventy-two conspirators nail it shut and cover it in molten lead. Like Moses in his reed basket, Osiris drifts in his sad floating sarcophagus down the Nile just as the ovum makes its stately passage through the narrow lumen of the oviduct.

In my recent article, "Plato: The Philosopher as Prenate" (Bonaduce, 2023), I identified the zona pellucida as a singular plot point in Plato's story of Atlantis. The philosopher relates how Poseidon became smitten with Cleito—improbably, the sole inhabitant of the island continent— "had intercourse with her, and [then] fortified the hill where she lived by enclosing it with concentric rings, alternately of sea and land" with the sole intent of making the spot "inaccessible to man" (Plato, 2008, p. 102). The allusion to the zona pellucida could not be more pellucid.

Then there is the disturbing bedtime story of Briar Rose, in which the eponymous briars serve the same purpose as Noah's pitch, Poseidon's rings, Israel's portable ark, and Osiris' molten lead sarcophagus. The maiden, in a state of suspended animation (commensurate with her actual role as an oocyte arrested in meiosis), is surrounded by briars enclosing her in an impassable obstacle, a death trap to every robust would-be hero attempting to make the crossing and rescue the girl.

## Apocalypse on a Pinhead

According to Mythobiogenesis, we are gifted as a species with the ability to recall life at its smallest magnitude, the cellular level, restating the experience in mythological terms of the greatest magnitude. Micro becomes macro. The fertilized cell is recalled as an ark bursting with life. And the most natural occurrence of the death of millions of sperm that fail to reach the ovum becomes the premise of the biblical flood; the unmourned demise of millions of spermatozoa becomes in the sacred retelling of a watery holocaust in which a pathological Deity destroys not only humankind but everything that lives, breathes, or crawls on the face of the earth. In the Genesis account, the ark contains every life form, both animal and vegetable, necessary to the total regeneration of life on Earth.

This is not altogether preposterous. Once we accept that the ark (as Laing astutely suggested) is actually a fertilized cell, we realize with a start that it does indeed contain all that is necessary for every genotype and every phenotype that has ever existed because it carries in its hold the molecule of DNA from which everything can be fashioned inclusive of those two giraffes and those two elephants and those two monkeys we see in illustrated children's Bibles.

And of all that lives, of all flesh, you shall take two of each into the ark to keep alive with you; they shall be male and female. From the birds of every kind, cattle of every kind, every kind of creeping thing on earth, two of each shall come to you to stay alive. For your part, take of everything that is eaten and store it away to serve as food for you and for them.' Noah did so; just as God commanded him, so he did. (*The Jewish Study Bible,* Berlin, 2014, Genesis 6:19)

The injunction to bring two of every kind, one male, one female—absurd on its face—is nevertheless in accord with the organizational principles governing DNA at fertilization. Twenty-three chromosomes from Mom are paired with twenty-three from Dad, and these homologous pairs become the zygote (Moore et al., 2020).

Implantation in the endometrium represents an almost Aristotelian climax in the unfolding cellular adventure; failure to implant accounts for 75% of early miscarriages. (Cleveland Clinic, 2022) The literary tension in Genesis reflects the high stakes of the moment.

> At the end of forty days, Noah opened the hatch he had made in the ark, and he sent out the raven to see if the waters had lessened on the earth. It flew back and forth until the waters dried off from the earth. Then he sent out a dove to see if the waters had lessened on the earth. But the dove could find no place to alight and perch, and it returned to him in the ark, for there was water all over the earth. Putting out his hand, he caught the dove and drew it back to him inside the ark. He waited seven days more and again sent the dove out from the ark. In the evening, the dove came back to him, and there in its bill was a plucked-off olive leaf! So, Noah knew that the waters had lessened on the earth. He waited still another seven days and then released the dove once more; and this time it did not come back. (*The Jewish Study Bible,* Berlin, 2014, Genesis 8:6-12)

Where Noah depends on doves and ravens to provide evidence that the earth is receptive to his crew and living cargo, the blastocyst relies on chemical signals. Integrins, proteins arising on the surface of the endometrium and the trophoblast surrounding the embryo, are "conveying information about the extracellular environment" to the approaching zygote (Wolter, 2013, para. 6). **"**In addition to their mechanical roles in anchorage, integrins transmit chemical signals into the cell (outside-in signaling), providing information on its location, local environment, adhesive state, and surrounding matrix" (Harburger, 2009, para.1).

## Of Doves, Ravens, and Mud-Diving Minks

Many such deluge myths include various procedures for "sensing the environment." The technique of avian reconnaissance is different in the story told by Utnapishtim in the famous Gilgamesh epic. He sends out a dove first, then a swallow, then a raven. An early third-century BCE Greek version of earlier Babylonian sources tells of a certain Xisouthrus who, in the Noachic role of a flood survivor, "freed several birds. They found neither food nor a place to rest" (Darshan, 2017, sec. 4). The motif of environment-sensing animals is not restricted to clay tablets from the ancient Near East nor to birds. The Newetee people on the northern tip of Vancouver Island tell of primordial mud-diving minks suited to the purpose of finding a safe landing in their version of the flood myth. The Papago tribe of the

American Southwest assign the task to Coyote. Montezuma (Noah's native American counterpart) says to his four-legged companion, "[Coyote], there must be other dry spots somewhere. You travel fast on four legs. Go west and do some scouting." Eventually, Coyote assesses the area to the north as a suitable place to rebuild civilization. Potawatomis recall the poignant account of the muskrat's attempt to prove that the earth is within reach somewhere beneath this now-receding deluge. The duck and loon had been unable to hold their breath long enough to make the determination. But when the muskrat floats to the surface, he is not breathing. In his lifeless paw, however, is a little clump of mud. The hope of a safe harbor is now a reality.

Noah's search for dry land and the transport of a blastocyst to implantation in the uterus are, I suggest, reciprocal realities. In the article "Deciphering the Crosstalk of Implantation: Advances and Challenges," Paria et al. (2002) explain the perils that must be overcome as the ovum—now a blastocyst—sends and receives chemical messages relevant to a safe landing. Their patient research led to the identification of embryonic signals responsible for initiating embryo-uterine interactions, specifically, Hb-EGF, a growth factor found in different cell types, and hCG, a hormone that arises in the trophoblast and elicits numerous responses from the uterine environment. The crosstalk gets more complicated still. Integrins, cell-adhesion molecules found in the endometrium and the blastocyst, have a role, not completely understood, in "conveying information about the extracellular environment to the nucleus and modulating the local immune response" (Wolter, 2013, para. 6).

Diligent researchers have spent whole lifetimes contemplating this delicate, even precarious moment in human reproduction, this chemical negotiation, this exchange of messages, or cell-to-cell signaling which dictates whether the blastocyst will implant or be sloughed away, a human waste product, but not a human being. The recursive dove in Noah's tale also sends and receives, eventually bringing back the olive branch as proof of dry land. Ark and blastocyst are looking for a soft landing where they can discharge their cargo. Having found his Ararat, Noah "removed the covering of the ark and saw that the surface of the ground was drying up" (Genesis 8:13-14). The blastocyst, similarly, hatches from the zona pellucida "on day six after the LH surge and is subsequently ready for implantation, probably within the nearest 24 hours" (Stavreus-Evers, 2005, p. 23).

## Implantation: Act II of the Prenatal Drama

If fertilization concludes the first act of the reproductive drama, the second act, surely, is implantation with its inherent risks, elements of suspense, and occasionally catastrophic outcomes. It is little wonder that this latent theme has been woven into the origin stories of ancient civilizations worldwide. R.D. Laing recognized the latent theme of implantation behind the adoption of Moses by the Pharaoh's daughter and a similar trope in Aqqi (sometimes spelled Akki), the water carrier's retrieval of the pitch-lined basket of Sargon.

It is hard to miss the metaphor in the story of Osiris, sadly adrift in the coffin made to his exact measurements, floating down the Nile and from there to the sea, a uterine journey in broad strokes. In the words of Plutarch,

> Thereafter Isis, as they related, learned that the chest had been cast up by the sea near the land of Byblus and that the waves had gently set it down amid a clump of heather. The heather in a short time ran up into a very beautiful and massive stock and enfolded and embraced the chest with its growth and concealed it within its trunk. (Plutarch, p. 41)

The Book of Exodus is told in a way that the hope of a Promised Land becomes the literary equivalent of the journey to the endometrium. It might be worthwhile to rehearse the elements of the second book of the Torah to see how it all falls together.

## Figure 1

*Book of Exodus and the Journey to the Endometrium*

| | |
|---|---|
| **March to Sinai.** | The sperm race for the egg. |
| **Parting of the Red Sea.** | Cervix open; admits passage of sperm in advance of the majority. |
| **Closing of the Red Sea.** Egyptians drowned. | Cervix closed—extermination of competing sperm. |
| **Reception of (twin) tablets.** | Mother-derived and Father-derived half sets of chromosomes arranged in homologous pairs. |
| **Emplacement of tablets in "ark."** | Fertilized ovum sealed against polyspermy (fertilization by more than one sperm) |
| **Ark carried by Hebrews toward the promised land.** | The morula/blastocyst floating toward implantation. |
| **Devastation of Indigenous peoples,** including Hittites, Girgashites, Amorites, Canaanites, Perizzites, Hivites, and Jebusites (Deut.7.1-3) | Complete elimination of remaining sperm/male sex cells in their foredoomed quest to reach the already fertilized egg. |
| **The "Promised Land."** | The endometrium, where the zygote will either implant successfully or abort. |
| **Crossing the Jordan with Priests in advance.** "But as soon as the bearers of the Ark reached the Jordan, and the feet of the priests bearing the Ark dipped into the water at its edge, the waters coming down from upstream piled up in a single heap a great way off… while all Israel crossed over on dry land, until the entire nation had finished crossing the Jordan." (Josh. 3.15). | Implantation in the endometrium. |

## Conclusion to Noah's Journey: Mitosis and Gastrulation

Then God said to Noah,

> Go out of the ark, together with your wife and your sons and your sons' wives. Bring out with you every living thing that is with you—all bodily creatures, be they birds or animals or creeping things of the earth—and let them abound on the earth, breeding and multiplying on it. (*The Jewish Study Bible,* Berlin, 2014, Genesis 8:5-17)

Noah is charged with nothing less than the repopulation of the planet, and again, "God blessed Noah and his sons and said to them, "Be fertile and

multiply and fill the earth" (Genesis 9:1). There is no command more congenial to a fertilized cell. Multiply? Thy will be done! The single cell comprising the zygote undergoes its first cleavage, doubling from one cell to two identical cells. These also double again and again, quickly becoming a *morula*, a solid ball of sixteen cells, then a *blastula* with the ever-multiplying cells segregating into small populations united by some future purpose. The inner cell mass, the ICM, gathers and will give rise to the embryo. Only at gastrulation does the pace of cell division begin to slow as the cells change positions into functionally distinct zones or "three types of tissue: the ectoderm, producing the skin and nervous system; the mesoderm, from which develop connective tissues, the circulatory system, muscles and bones; and the endoderm, which forms the digestive system, lungs, and urinary system." (Britannica, *Embryo,* para. 3).

Evoking the equivalent of the tri-laminar germ layers of the gastrula, there are three sons of Noah: Shem, Ham, and Japheth, "and from these, the whole world branched out" (Genesis. 9:1-7). I am suggesting that the story of Noah and the story of a single fertilized cell are the same, the point-by-point correlations due to the phenomenon called Mythobiogenesis.

## Window on the Womb

In the keynote address to the APPPAH conference, Dr. Thomas Verny asked, "How do we gain knowledge of the unborn child? What sort of windows into the womb can we detect?" I submit that Mythobiogenesis provides a window on the womb, not necessarily in terms of individual psychologies so much as regards the whole *weltanschauung* of civil society, of cultures that are "seen to behave as if all members are bound up together in a shared intra-uterine environment…[which] over time, generates a series of myths, rituals, symbols, beliefs and dynamics which externalize and reify the contents of the common unconscious." (Wasdell, 1992, p. 9) On another occasion, I would like to pursue Wasdell's proposal and explore the dynamic relationship of the preborn and the culture into which they will be born, not just in terms of stories but in terms of religious praxis and liturgies, large and small. But for now, it is sufficient if I have, in some measure, demonstrated the strong possibility that inside the cell, which has been called the essential unit of life since the seventeenth century, is a place where proteins and stories come from.

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# Vladimir Putin as a Return of Dr. Jekyll and Mr. Hyde: A Psychohistorical Exploration of the Nature of Human Contradictoriness

Ludwig Janus, MD

The split personality of Vladimir Putin draws parallels with the characters of Dr. Jekyll and Mr. Hyde. From our current knowledge of developmental psychology, especially prenatal psychology, we can recognize and describe traumatizing conditions in early childhood as a background for such personality splits. These traumatizing childhood conditions experienced by Putin are in an interplay and inner resonance with the traumatizing childhood conditions in Russia. It is essential to acknowledge how early childhood traumas have shaped our collective history, as evident in the violent and exploitative structures of domination across societies. By examining the significance of early childhood conditions, we can gain a deeper understanding of human nature and work towards a more empathetic and peaceful world.

*Keywords*: Putin, psychohistory, prenatal psychology, war

In assessing the personality of Vladimir Putin, two perspectives overlap. In his early days, Putin was suave and agreeable, while the apparatchik he became culminated in his violent policies with military means. In 1886, the

**Ludwig Janus, MD** is located a Specialist in Psychotherapeutic Medicine, Prenatal Psychologist and Psychohistorian located at Jahnstr. 46, 69221 Dossenheim, Germany. Ludwig can be contacted at Tel. 06221 80 16 50, janus.ludwig@gmail.com, www.Ludwig-Janus.de, www.praenatalpsychologie.de, www.geburtserfahrung.de.



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English writer Robert Louis Stevenson described such a seemingly strange contradiction in one person in the fictionalized persons of Dr. Henry Jekyll and Mr. Edward Hyde. In his story, the honorable doctor and scientist, and the violent criminal, are two sides of the same person. Exploring the nature of human contradictoriness, which stems from the unique conditions of early development, sheds light on the origins of this kind of split personality.

## The Nature of Human Contradictoriness

A fundamental problem in the nature of Homo sapiens is a self-overload by the conditions of his early development. Due to the evolutionary-biologically conditioned birth in a state of neurological immaturity and incompleteness, the second part of the fetal development and maturation in the first year of life occurs in the outside world, the extrauterine early year (Portmann, 1969). Therefore, the infant is in an existential dependence on the related presence of a mother or relationship person who has to compensate for the neurological immaturity. Sigmund Freud formulated the situation: "The psychic mother object replaces the fetal situation for the child" (Freud, 1926, p. 169).

This unnaturalness of the initial conditions of life is the background for the vulnerability of the child at the beginning of life. At the same time, it is the background for the astonishing creativity of humans to reshape themselves and their environment again and again. This is a vast topic that I have explained in five books (Janus, 2011a, 2018, 2019, 2020, 2021a).

Due to the premature nature of human birth, early experiences, and associated traumas are stored in the midbrain and right cerebrum, inaccessible to the linguistically organized left hemisphere of the brain. However, they continue to influence the experience and behavior in an emotionally related and mediated way. At the same time, under traumatic conditions, they are effective only as repetitions, dominating the experience and behavior of the so-called dissocial person.

In this context, missing or negative empathy is of special importance, as mentalization research assumes (Taubner, 2016). In the initial period of life, empathy is either learned or not (Tronick et al., 1978), as is the case with the frightening numbness of dissocial people. This applies equally to collective socialization conditions, as has been extensively researched in psychohistory (DeMause, 2000, 2005; Fuchs, 2019; Reiss et al., 2021).

Goethe's Faust exemplified the dichotomy of good and evil sides in us, with fairy-tale and myth-like features. A half-century later, Robert Louis Stevenson was able to formulate and portray these different dimensions in the concrete sub-personalities of Henry Jekyll and Edward Hyde in a very personal way. However, only today, based on prenatal psychology and psychohistory, can we, as shown above, grasp the developmental psychological traumatization background of this hidden resonance in being traumatized early in childhood. This leads us back to the formation of contradictoriness between Vladimir Putin and Russian society.

## The Psychological Background of Putin's Contradictoriness

From a psycho-historical point of view, the current war is a reenactment of the immense traumatization of the Russian and Ukrainian populations in their history, especially during World War II (Snyder, 2022). The war was outwardly over in 1945 but lived on in people as an embodied horror (Van der Kolk, 2019). Then, it erupted again in the context of social modernization and the associated individuation or transformation demands of recent years in the form of envisioning a restaging of the war.

This dynamic is reflected clearly in Putin's statements that the so-called special operation is intended to prevent a genocide of the Russian population planned by the Nazis in Ukraine. I believe Putin speaks from the experience of his parents: the German army, led by the Nazis, planned the genocide of the population of Leningrad (now Saint Petersburg) through starvation. This put a traumatic burden on Putin's parents. His mother narrowly escaped starvation, while an older brother of Putin's starved to death. Putin's father lost five older brothers in the war and suffered a serious war wound while defending Leningrad. Putin's father also allegedly forced the pregnancy against the mother's will, as she is said to have testified to a friend (Sadovnikova, 2017). Both parents had to work in a factory and could hardly care for the boy, who grew up on the streets in the milieu of violent youth gangs (Fuchs, 2022; Müller-Meiningen, 2022).

In an interview, Putin has described himself as a former ragamuffin. According to a childhood story, rats lived in the staircase of Putin's home in Leningrad. Putin had difficulties at school. According to credible testimonies, he was saved by a female teacher who cared for the disadvantaged boy and systematically supported him (Sadovnikova, 2017).

Putin was born seven years after the war's end but the traumatization of his parents and the Leningrad population, half of whom had starved to death during the army siege still reverberated when he was conceived, carried, and born. This background of trauma in Putin's family has its counterpart in the extreme traumatization of Russian society.

In addition, the repressive structures of the violent tsarist rule with their devastating effects on the situation of children (Ihanus, 2001a, 2001b, 2008, 2016; Krimer, 2022; Lincoln, 1981) were followed by the Stalinist tyranny with about 750,000 executions in the so-called "show trials" during the *Great Terror* at the end of the 1930s, a Gulag system with 17 million prisoners in predominantly inhumane conditions, and the visitation of the German army's war of extermination which resulted in the deaths of 20 million Russian soldiers and 7 million civilians. A problem in recent Russian history is how Stalin became the good savior of the fatherland through his victory over the even more violent felon Hitler, thereby legitimizing his claim to imperial power.

## Consequences of Psychotraumatic Stress

Today, we know from research the effects of psychotraumatic stress in the form of anxiety, depression, and insecurities, and the disposition to commit violent acts (Fuchs, 2019, 2021, 2022; Hartwich, 2022; Huber, 2018; Janus, 2021b, 2022; Mareckova et al., 2018; Müller-Meiningen, 2022; Scheinost et al., 2017; Van der Kolk, 2019; Verny, 2005). In addition, the restriction of the capacity for conflict is an important consequence, which is why the reaction to difficulties quickly turns into violence, into acting out one's own trauma on the other. The allegedly "miserable creature" that "has no right to exist" corresponds to the so-called "equivalence mode" in mentalization research, in which the outside is perceived in the mirror of one's own strong emotions (Taubner, 2016, p. 72). This rejected part had no real home or raison d'être, as can only be found in an empathetic parental relationship with non-traumatized and mature parents. Putin's tendency to classify everything by hostility, conspiracies, and threats is the expression of a deep disturbance experienced during his life inutero and his extrauterine first years.

Perhaps the often polemically heated discussion about the war in Ukraine can be better understood if one realizes that the German Reich, i.e.,

our great-grandparents, grandparents, and parents who lived during the two world wars, were caught in a similar projective reenactment of early childhood experiences of violence, where "a beating never hurt anyone," and infants were left to scream "so that their lungs were ventilated" (DeMause, 1979, 1996, 2005; Ende, 1979; Janus, 2021b). This lack of empathy was also a characteristic feature of earlier European politics, not only in German colonial policy but also in the violent structures of English colonial policy (Elkins, 2022) and the Belgian colonial policy in the Congo (Conrad, 1902). From history, we know about the violent and exploitative structures of European societies' domination and the Catholic Church's criminal history (Deschner, 1989). The war in Ukraine can be seen as a reenactment or continuation of this historical psychotraumatic stress.

## Reflections

It is not easy to understand the paradoxes of history with great creative developments and, at the same time, frighteningly destructive violence and abuse—a kind of collective staging of the dimensions of Dr. Jekyll and Mr. Hyde. In the novella "Turning of the Screw," the American writer Henry James (1898) describes how a hostile rejection of children and a disregard for their relational needs can lead to such a split into an angelic and a malevolent side. The abysmal cruelty in family and social relationships in Russia is also portrayed in several of Fyodor Dostoevsky's novels. The life of most of the Earth's population was existentially marked by this cruelty.

Parents' empathic capacities were fragmentary and had an incomplete response to children's real needs. This was especially true when humans began to live in unnaturally large groups after the invention of agriculture and animal husbandry, thereby damaging or deforming mothers' instincts from their primate heritage. The early separation of mother and child in early and advanced civilizations, and the associated rupture of the existential need for an empathetic presence of a caregiver had tangible consequences for the mental health of the offspring (Renggli, 2001). From today's knowledge, we recognize this as a reason for the tremendous cruelty of war.

The chance of our time consists in the fact that we can reflect on these connections for the first time and we can recognize the premonitions of great writers. The perception of the life-historical significance of the conditions at the beginning of life can be a great resource. Then the question arises: how

can one give such a fundamental meaning to the traumatic aspects of early childhood conditions when we expect parents to love their children? That is precisely where the study of the history of childhood within the framework of psychohistory can give answers (DeMause, 1979, 2000).

We can see today that only in the second half of the last century, a larger part of the population in Western societies reached a maturity that allowed a truly empathetic relationship with children (Armbruster, 2006; Axness, 2012; Franz, 2009; Grille, 2005, 2016). From a psycho-historical point of view, the love of parents in the historical process has a fundamental importance. Parents, with an instinctive love for their children, do everything possible so that their children grow up under less traumatic conditions than they had to suffer. This process is agonizingly slow because of the compulsion to repeat negative patterns stemming from early imprints. The unhappiness must first be restaged for a new learning process can occur.

The disillusionment caused by the horrors of World War I made possible the first approach to a democratic constitution in Germany. Because the collateral damage of traumatizing an entire generation of younger men in World War I was so extensive, it took the repetition of World War II to learn that violence is not the only solution and to develop a maturity of reflexivity that then enabled democratic approaches to break through. One can hope that through such a destructive reenactment of the violent early childhoods in the Bloodlands, a learning process will be set in motion to help human rights, self-determination, and a breakthrough of responsibility.

## Conclusion

The psychohistorical exploration unveils the profound impact of early childhood conditions on human nature, echoing through the annals of history. Putin's contradictoriness mirrors the contradictions ingrained in the fabric of societies scarred by violence and exploitation. The trauma of war, as experienced by Putin's family and the Russian population, reverberates through generations, shaping ideologies and policies. In the context of Putin as a symbol of generational (dis)functioning, the imperative for early childhood development, empathy, attachment, and trauma-informed care becomes glaringly evident. The narrative of Putin's life becomes a microcosm reflecting society's broader challenges in breaking free from the cycle of violence and fostering a more empathetic and peaceful world.

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# The Positive Outcomes of the FreMo Approach

Moffat Osoro, MA

This article highlights the positive outcomes of the FreMo approach and the psychological factors affecting conception, pregnancy, labor, birth, and postpartum. The care at FreMo Medical and Birth Centre is uncomplicated and delicate, aiming to support natural childbirth. It emphasizes informed choice and has a natural birth rate of 96 percent. The pillars of maternal care at FreMo are compassionate care, safe services, privacy and confidentiality, dignity and comfort, and community support. Our vision is a world where every woman is supported, respected, and appreciated throughout her pregnancy, birth, and motherhood journey. We believe every woman deserves access to the information, resources, confidence, and support she needs to have the best possible experience. In this world, every baby would have a fair and equal chance at life and love.

*Keywords*: maternal care, Kenya, pregnancy, birth center

**Moffat Osoro, MA** is a psychologist in Nairobi, Kenya, and the founder of FreMo Medical and Birth Centre. In 2009, with only $1,000, Moffat started the facility to offer affordable, quality, and accessible medical care to the people of the Kawangware informal settlement on the outskirts of Nairobi. Moffat's brother, Fred Sagero, joined the initiative two years later. The center has now attracted global attention for its better and gentler medical care to families and women. In June 2011, Australian midwife Vicki Chan joined Moffat as a co-founder. Together, they have established the gentle care culture of birthing at the center. Drawing on his experience with FreMo, Moffat wrote a chapter for the best-selling book "*Womb to Thrive: The Missing Keys to Heal Yourself, Your Family and the Planet*" (Gerland, 2022).



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## Psychological Factors Affecting Conception, Pregnancy, Labor, Birth, and Postpartum

### Preconception Counseling

In Kawangware, mothers do not come in for preconception counseling or information. Those who come to the center seek medical check-ups after trying to conceive. Others come after a miscarriage or after failure to procure an abortion. Preconception counseling is unknown here by definition. We understand preconception counseling as an appointment with a healthcare provider that is used to plan for a future pregnancy. Family history, risk factors, medical conditions, and lifestyle are discussed. This appointment is important for a planned and healthy pregnancy. However, in Kawangware, the community is impoverished. Getting preconception information is unheard of or, if known, would be considered a luxury. Counseling becomes necessary when a woman has difficulty conceiving, but at this point, it may be riskier or unsuccessful. Preconception and conception counseling are critical for saving babies and reducing parents' psychological stress. Information and resources are paramount in reducing the burden of trauma and ensuring mothers stay healthy and their babies remain healthy, protected, and safe. It is recommended that all women undergo medical check-ups before conceiving to ensure a healthy pregnancy and delivery. Governments should ensure that perinatal medical care is available in a friendly and supportive environment.

### Challenges During Pregnancy

In most informal settlements (e.g., Kawangware), people experience more violence than in other neighborhoods. Challenges of poverty, lack of education, and negative peer influences, including drug abuse, smoking, and alcoholism, are common. Raising normal children in abnormal settings can be very demanding. Informal settlements are hubs of conflict, fighting, muggings, robberies, rape, and other injustices. This is the norm for the youths living there. The seeds of animosity are planted long before their birth. How do you develop strategies promoting peace, harmony, and love? FreMo Medical and Birth Centre was established to address the community's distress.

FreMo Medical and Birth Centre serves members of the Kawangware community. The care provided at FreMo is simple, straightforward, and compassionate. It is delivered with a sense of normalcy, making patients feel comfortable. Attending prenatal classes can be challenging, but it is a beautiful and loving experience for mothers. Our focus is to promote self-love and acceptance, supporting those with emotional baggage. Many of our female patients find it difficult to imagine a different life. To them, it sounds like a myth. We aim to prove them wrong in every possible way without manipulation. Our prenatal care comes with a package. Antenatal care aims to diffuse fear by putting skills into action and emphasizing safety, healthy eating habits, and drinking clean water during pregnancy. We encourage and fully support the participation of partners and immediate family members. We empower individuals by guiding them to prioritize self-care, self-assertion, self-love, and self-awareness.

## Empowering Pregnant Women

Enabling individuals to acquire skills and knowledge can catalyze personal and social growth, empowering them to overcome challenges and reach their full potential. Our role at FreMo Medical and Birth Centre is to support mothers and families throughout the birthing process, enabling them to have beautiful and positive experiences.

*Women Attending Prenatal Circle*

Antenatal care patients who come to our center face serious social, cultural, financial, and economic challenges. Our form of empowerment does not directly solve these problems. However, it serves as a foundation for women to recognize their true potential and understand what is necessary for them to participate in the journey of pregnancy, empowerment after birth, and successful parenting. Without such a foundation, the whole motherhood and family care process will be in jeopardy. During the enrollment interview, we discuss a woman's ability to conceive and carry a healthy pregnancy to term. We will also evaluate the level of support she has to help her achieve a successful natural birth and raise her baby with a sense of pride and fulfillment.

In many settings, women are only valued for their ability to bear children and care for their families. Prejudice must be eliminated, allowing women to be seen as persons capable of decision-making and family-raising with support and empowerment rather than as objects of delivery. By the time most women seek antenatal care or give birth, they have already endured prejudice, abuse, and ridicule. Proper counseling and positive assurance are needed to overcome cultural barriers and beliefs. Our partnership is a genuine collaboration. We ensure that husbands are welcomed and encouraged to participate fully in the journey towards birth. Our care is incomplete without their attendance.

In the beginning, when we proposed such a partnership, we were ridiculed by many in the community who thought involving men during pregnancy and birth was a myth. Most of our male clients hold traditional beliefs. We started with disappointment, but soon, the men gave in and came aboard. When a man is fully involved in pregnancy and childbirth, he is more likely to support his partner by providing proper nutrition, emotional support, and physical assistance in various activities at home and outside. The husband or partner becomes involved in the pregnancy journey by practicing responsible sex and preparing for the baby by providing resources to support the mother and the unborn child. It is easier to manage expectations about the gender of the baby if the parents are coached early to love and nurture the baby equally, regardless of its sex.

*Babies Born at FreMo*

*Happy Couple at Postnatal Room*

Supporting women during pregnancy and birth reduces complications. A woman who is physically and mentally healthy during pregnancy receives proper nutrition, and is supported by her partner is likely to have a smoother and less stressful pregnancy. This environment can create a welcoming and friendly atmosphere for the baby's arrival. Miscarriages and other

gestational complications are reduced, making pregnancy expectations of both mother and provider a reality.

During pregnancy and postpartum, resources are essential. Midwives at FreMo gather information on how the mother and baby will be fed after birth. Mother and baby should be nourished through proper healthy feeding methods. It is essential to ensure that food is available for the mother to ensure adequate milk production during breastfeeding. If the mother is single, it is important for her to establish a support system and plan for her life after hospital discharge. For those who are married, the mother and father are encouraged to create a plan together and put resources in place for the postpartum period. Women are encouraged to join a welfare community group or start saving little by little as they approach the last trimester of their pregnancy. They are also counseled on how to care for the baby once they resume their normal work duties. The outreach program pays visits to patients' homes and ensures that they follow the information provided by the midwives and receive support at home. Those who may be able to pay the little fee attached to our care are advised to deposit it in installments.

Most women are unaware of their roles and rights during pregnancy and birth. Often, women surrender their bodies to providers who make decisions for them and provide or withhold information, some of them with ulterior motives. Part of the empowerment we propose is providing information so the mother can consent and make decisions based on what she knows is safe for her and the unborn. When a woman chooses her path of pregnancy and after birth realizes that her path was honored and respected, she feels empowered, and her happiness will guide her as a mother and woman. By empowering through social justice, compassion, and dignity, the providers play their part and honor their duty of preparing the woman for motherhood and raising her infant with joy, appreciation, and gratitude.

## Birth and Perinatal Environment at FreMo

The FreMo team in Nairobi has successfully influenced better birth practices towards normalcy and gentleness in just a couple of years. The FreMo dream was to share the beauty of birth with pregnant women, birthing women, and the community. The prenatal and perinatal care in FreMo is offered in an environment of love, gentleness, and kindness. This relieves stress and external pressure that, in one way or another, may bring

tension and complications to the laboring mother.

Skills are ever-present, virtues are the tools of facilitation, and the recognition of inherent dignity is upheld with grace. The center provides safety with the availability of emergency care when needed and timely referrals to strengthen care. The referrals are rare, and the outcomes after referrals are positive. The National Referral Hospital in Nairobi is the choice of Fremo, where an emergency call is made before transfer. The hospital then prepares to receive the mother. An emergency team of skillful staff waits for the mother's safe arrival in a van. All birthing mothers stabilized are discharged to go home and can be reached by our skilled midwifery outreach team.

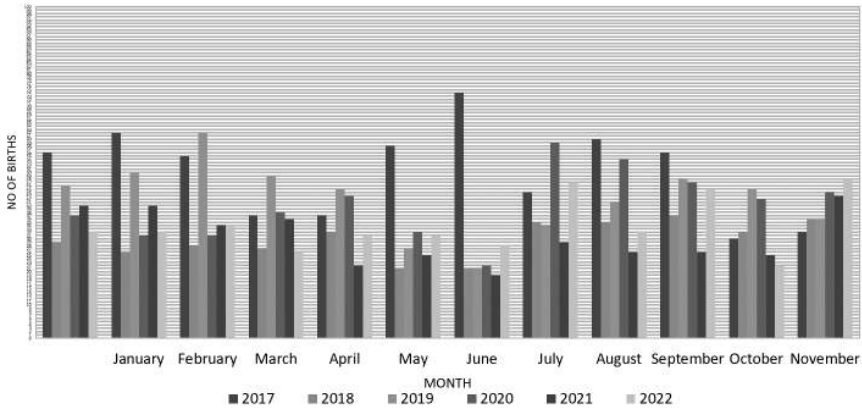
**Table 1**

*Births at FreMo*

| | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|
| **January** | 56 | 29 | 46 | 37 | 40 | 32 |
| **February** | 62 | 26 | 50 | 31 | 40 | 32 |
| **March** | 55 | 28 | 62 | 31 | 34 | 34 |
| **April** | 37 | 27 | 49 | 38 | 36 | 26 |
| **May** | 37 | 32 | 45 | 43 | 22 | 31 |
| **June** | 58 | 21 | 27 | 32 | 25 | 31 |
| **July** | 74 | 21 | 21 | 22 | 19 | 28 |
| **August** | 44 | 35 | 34 | 59 | 29 | 47 |
| **September** | 60 | 35 | 41 | 54 | 26 | 32 |
| **October** | 56 | 37 | 48 | 47 | | 45 |
| **November** | 30 | 32 | 45 | 42 | 25 | 22 |
| **December** | 32 | 36 | 36 | 44 | 43 | 48 |

**Figure 1**

*Births at FreMo 2017-2022*




Our outreach program aims to reach with care at the mothers' homes. The audit done at home gives a scorecard of whether this mother is fully supported or if she can benefit from getting help. We monitor the baby's health, growth, and development with continued child welfare clinics. Our nutritionist specialists address any malnutrition. Our prevention of mother-to-child transmission is 100%, and our family planning absorption is well received. There are cervical screening and comprehensive care clinics for HIV mothers and their families.

**Postpartum at FreMo—Midwife Outreach**

In December 2012, we started a postnatal outreach program to support mothers discharged from our center and those who have given birth in other health centers and hospitals within our local community. We initiated postnatal outreach immediately after discharge based on the needs and concerns of our birthing mothers. The mothers we serve directly communicate with the clinic through midwives or doctors. We discharge our mothers after birth depending on their stability and the fact that most of the women find it comfortable and familiar when they are transferred home to their immediate families. We discharge them when we determine they are

medically stable to go home. From research and practical experience, we realize that some complications can arise even after discharge, which we did not anticipate or predict; therefore, postnatal follow-up is needed to ensure mother and baby are well taken care of, and if any complications arise, they shall be well taken care of.

A typical outreach day starts with the midwife and her assistant calling the mother at home to get confirmation of her availability, convenience, and willingness to let them go to visit her. After getting confirmation and locating the physical address, off they go. The midwives adhere to visitors' etiquette and professional medical ethics at patients' homes. They carry equipment (medical) and other essential supplies for their job. Equipment includes a blood pressure machine, a stethoscope, a hemoglobin machine, a portable pediatric scale, gloves, tissues, and a thermometer. On arrival, they explain to the mother and family the reason for the visit and request that they see the baby. The mother may refuse or accept. Referring to the hospital's discharge summary, midwives look at what was written and ask the mother whether she has adhered to what the doctor had recommended.

**Baby**

When visiting the mother at home, the first question will be whether the mother will allow the baby to be examined. Some women, perhaps out of cultural beliefs, opt to say no, giving excuses like it is too cold, the baby is asleep, or the mother does not want to disturb it. When able, the midwives do check-ups and examinations that include checking the baby's weight and vital signs, checking the skin and umbilical cord, asking whether the baby is crying a lot, and frequency of urine and stool passage; assisting with cleaning and or bathing of the baby and inquiring about breastfeeding, the breastfeeding technique, and addressing any other breastfeeding concerns.

**Mother**

The midwives also care for the mother. They check her general body condition and vital signs. They check for anemia if the mother lost significant amounts of blood during birth or if her Hemoglobin was low during pregnancy and childbirth. The midwives examine her breasts for cracked nipples, engorging, tenderness, and infection and her abdomen to ensure the uterus has contracted and if there is tenderness while also

assessing bleeding and any other discharge. Calves are assessed for pain and pedal edema. Lacerations and birth wounds, if present, are tended to. If the midwife finds any abnormalities and concerns, she will address them at home or return the mother to the clinic.

**Benefits**

Our practice of care is an example of how to diagnose neonatal sepsis and how to treat it early and overcome the trap of neonatal deaths. Neonatal sepsis is "an infection involving the bloodstream in infants less than 28 days old" (Singh et al., 2022). The support that new mothers get 48-72 hours after birth and other regular visits after birth help deal with postpartum complications that might occur after discharge from the birth center.

We promote exclusive breastfeeding. Without appropriate advice and information, many mothers, when not producing enough breastmilk, opt for other options for feeding their newborn, including formula milk and other processed milk. At our center, they get support on how to express and breastfeed and information about the dangers associated with non-exclusive breastfeeding, which can decrease the baby's immunity and normal growth. We insist on proper umbilical cord care and hygiene because this can be a way to tame earlier cases of bacterial infections and unnecessary use of antibiotics for newborns.

At FreMo, we believe in appropriate family planning. Recently, a mother called the clinic to find out whether she had conceived. This happened two weeks after she had been discharged from the hospital after birth. She was unfamiliar with postpartum sex and family planning methods. There was another case with a mother who had given birth six months ago and wanted to consult the doctor at the clinic. After running a few tests, the doctor confirmed her worst fears: she was pregnant again. Family planning counseling during outreach is a time to guide and inform. It provides an opportunity for women to access information on appropriate and preferred family planning methods so that they do not fall victim to unwanted pregnancies and unsafe abortions (abortion is illegal in Kenya) during postnatal care.

## Challenges

Our center faces the problem of insufficient personnel. Sometimes, when more women come in for a birth, the midwives have no choice but to take care of the mothers in advanced labor and plan other appointments when they are less busy. Attending to patients becomes tricky during weekends when our midwives alternate being off duty. Some women, because of the poverty they experience, feel embarrassed to welcome visitors to their shanty homes and, therefore, offer excuses for not welcoming the midwives. Furthermore, it becomes hard to access most of their homes because they are deep inside the informal settlements, and therefore, the distances covered fatigue the midwives trying to access those families.

Some women, due to their cultural beliefs, do not allow strangers to see their babies until they have reached a certain age. The weather also plays a role. During the rainy season, it is difficult to access certain sections of the slums because the paths and roads are almost impassable because of poor drainage and mud. An African belief exists that you must bring gifts for the unborn and the mother whenever you visit a newborn. When the midwives call, some mothers are happy, thinking some goodies are coming, but if one visits empty-handed, one should be prepared for a negative reception.

## Conclusion

Our main purpose is to propagate love and self-acceptance. The women we work with find it hard to believe that a life of normalcy exists. We set a tone to prove them wrong in all ways possible but without manipulation. Our prenatal care comes with a package. Antenatal care diffuses fear by putting skills into action, emphasizing safety, healthy eating habits, and drinking plenty of clean water during pregnancy. Partners and immediate family members are encouraged to participate and provide full support. We instill confidence and appreciativeness when guiding future parents through the need for proper self-care, self-assertion, self-love, and self-consciousness. Our maternal care package is that of empowerment. The support from labor to birth gives families wings of hope to reclaim their inherent dignity. This tangible difference in the lives of our patients comes from providing a compassionate, favorable, kind, and loving environment.

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# My Path to Healing: A Mother's Journey of Self-Discovery and Transformation

Kellie Natoli

My name is Kellie Natoli. I have always had a thirst for learning and growing. At age ten, I discovered gardening through a teacher and have been fascinated ever since. I consider myself an intuitive person who enjoys other cultures. Over the years, I have had various experiences, from working as an olive harvester in Italy, teaching in Chile, and providing tech support for a financial software company. Currently, I work in marketing for a garden center in Northern California. I am happily married to my husband of 12 years, and we have two darling daughters, a cat and a fish.

Nine years ago, my life changed as I became a mother. I was completely unprepared for the journey ahead, and I experienced a traumatic childbirth, struggled with postpartum depression and anxiety, and had a disconnected relationship with my daughter. Since then, I have had another child and have been fighting to find a new path. I share my birth journey in this paper because I believe that mothers and their stories matter. I hope my story might provide insight to mothers and practitioners. Especially those who feel they are searching for answers. It is organized in a timeline format where I describe my attempts at repairing the trauma. I end by touching on which treatments helped me, my conclusions, and my considerations for the future of perinatal care.

## My Journey Timeline

In December 2013, I discovered I was pregnant with a due date of August 11, 2014.

**Kellie Natoli** can be reached at kelliecnatoli@gmail.com or 714-402-9044



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**August 20, 2014**

11:00 a.m.: I had an appointment with my doctor, where I got my membranes stripped.

6:00 p.m.-11:00 p.m.: I started prodromal labor and went to the hospital.

Midnight: We were sent home from the hospital. My cervix dilated to two centimeters. I needed to be at three centimeters.

**August 21, 2014**

Midnight- 6:00 a.m.: I labored at home and experienced intense pain without respite. We tried to sleep. My husband went into the other room. I was alone for several hours. Contractions were maintained at five-minute intervals.

6:30 a.m.: I was admitted to the hospital at barely three centimeters.

7:00 a.m.-10:00 a.m.: I was given narcotics for sleep. I did not want drug interventions, but I had no stamina after my long and painful night.

10:00 a.m.-2:30 p.m.: I received Pitocin without pain medication. I experienced little progression. I was still at three centimeters and felt like I was being tortured. This was traumatic for me.

3 p.m.: I was given an epidural and experienced relief from pain—my first reprieve from pain in nearly twenty-four hours.

3-7 p.m.: I progressed from three centimeters to nine centimeters.

7:30 p.m.: I started pushing.

8:30 p.m.: Pushing stopped. My water hadn't broken yet.

10:30 p.m.: Pushing commenced again.

11:30 p.m.: My baby was nearly born. The cord was wrapped around my baby's neck. The doctor performed an episiotomy for an efficient delivery. My baby didn't cough or cry. Medical staff rushed into the room. Staff used suction to remove fluid from the baby's airway. Baby breathed and after the nurses checked her, I held her. I felt physically and emotionally overwhelmed by the birth.

**August 22-24, 2014**

In the hospital, the baby seemed extremely alert. Not the sleepy newborn I expected. I struggled to nurse the baby.

**August 25, 2014**

Baby's first checkup. The pediatrician said he had not seen a baby this alert in a long time.

**August 28, 2014 and subsequent times**

I sought lactation help from the clinic and was diagnosed with an overactive letdown.

**September 1, 2014**

My baby begins crying most evenings for several hours.

**September 12, 2014**

Baby's three-week checkup. I told the pediatrician about the crying. He stated that four nights of crying for more than four hours at a time was considered colic. The pediatrician said, "There is nothing you can do."

**September 20, 2014**

We got a second opinion from a different pediatrician. The doctor delivered a similar diagnosis. It was colic or acid reflux. This doctor offered an improved bedside manner with calm and compassion. Zantac was prescribed as an option for acid reflux.

**September 21—November 2014**

I struggled daily with breastfeeding. My baby had difficulty sleeping and eating and exhibited signs of colic. I sought continued lactation help. The baby was hyper-alert.

**December 2014—April 2015**

Overactive letdown continued. I found lying down while nursing helpful and continued breastfeeding. My baby's naps were generally twenty to thirty minutes. I was exhausted. My family lived far away, and I had little outside help.

**April 15, 2015**

We went on a family trip where we introduced solid foods. The baby took her first two-hour nap. While on the trip, I discussed my new life as a mother with my mentor. My mentor was my college professor and had overcome adversity in her own life. I discovered I was suffering from postpartum depression. My mentor suggested I include daily exercise in my

routine. She stated it was as or more effective than any pill to combat depression.

**May 2015**

We forgot to give a dose of Zantac in the morning. By the afternoon, we realized the baby was okay. We discontinued Zantac.

**July 2015**

I introduced formula feeding. My baby started sleeping through the night. Until then, the baby would wake me at least once nightly.

**August 2015**

My baby turned one.

**September 2015—August 2016**

I worked part-time. Ten hours a week but mostly remained a stay-at-home parent. I struggled with my daughter. I felt stressed, alone, and disconnected from my daughter. I was unable to help my child during stressful moments. There were long tantrums most days. I started experiencing panic and anxiety when I drove long distances.

**September 2016**

I sought psychological therapy. I wanted more children but felt afraid of another difficult birth. The therapist helped me sift through my fears. I felt confident enough to try getting pregnant.

**December 2016**

I discovered I was pregnant.

**August 2017**

I gave birth to my second daughter and had an improved birth experience. This, in part, was due to a better connection with my doctor, other physicians in the practice, and a continuity of care. My obstetrician didn't deliver me, but he displayed the utmost confidence in the care I would receive from his colleagues whom I had met. With my first daughter, I was part of a huge medical system. There was no continuity of care as I experienced during my second birth.

**Second Birth**

August 28, 2017

3:00 a.m.: My water broke.

4:00 a.m.: I was admitted to the hospital ten days past due. Contractions were five minutes apart.

7:00 a.m.: I received an epidural.

8:00 a.m.-12:30 p.m.: I progressed from two to nine centimeters.

1:00 p.m.: Ten minutes of pushing, and my baby was born. I held my baby in my arms immediately.

**September 2017**

I had an improved experience nursing, and this baby was easily soothed. Relational challenges with my first daughter remained. The first child, at age three, still showed sensitivity to her physical environment. Our attachment felt insecure.

**September 2018**

My baby was sleeping through the night. I experienced insomnia. I continued feeling a lingering sadness over the ruptured relationship with my first daughter. I was experiencing anxiety when driving long distances. I confided in a few close friends.

**September 2019**

My first daughter started kindergarten. Our relational difficulty continued. My child was sensitive to her environment. After I took her to the dentist, for example, she melted to the ground from her chair. She could not tolerate someone putting their hands in or near her mouth. She squirmed like a worm. Why? That year, I asked the kindergarten teacher, "Do you think she might be on the autism spectrum?" The teacher assured me after many years of teaching children, my daughter wasn't on the spectrum. I still had no answers to the question, "Why is there constant relational and sensory adversity with my firstborn daughter?"

**April 2020**

I continued with physical issues in my body. Beyond insomnia, I started having unexplainable rashes, IBS-like digestive issues, extreme fatigue, and headaches. This reached a tipping point, and I realized I needed support.

Concluding this section of my story, I often felt stressed, alone, and disconnected. Why was my baby so alert from day one? Was her central nervous system in shock like mine? Was she also reeling from the stress of birth? There were glimmers of hope when I received attuned care from a postpartum nurse, the new pediatrician, or when my mentor helped identify that I had postpartum depression. But far and away, I felt hopeless and helpless in my new life as a mother. I wanted to be on a different path. My mind, body, and emotions felt dysregulated. Were there tools to deal with my circumstances?

## Treatment That Helped

I found tools from a functional medicine doctor who helped bring calm to my physical body. Later, I met an attuned therapist who calmed my nervous system, mind, and emotions. These are described below.

**November 2020**

I met with a functional medicine doctor. He suggested an anti-inflammatory diet for six months based on my symptoms and blood work. He also noticed autoimmunity markers of the thyroid. My numbers were reaching Hashimoto's Disease levels if left untreated. He provided digestive support, nervous system support, and supplementation for my overall immune system health.

**April 2021**

I showed incredible improvement after six months of a gluten- and dairy-free diet and thoughtful supplementation. My thyroid antibodies dropped by four hundred points. My life changed. I was sleeping again, my digestive health improved, my headaches stopped, and I had energy. My mood improved, and I noticed inflammation was dissipating.

**July 2021**

Although time had passed, and I had a successful second pregnancy and birth, I still felt helpless with my first daughter. She would face adversity like sharing a toy, a change of plans, a loud sensory experience, or frustration and be unable to have a large enough window of tolerance to move through the adversity and discomfort. Describing the day's events, I told my husband in a frustrated and angry tone, "I wish she had more

resilience!" At that point, I learned that a child's regulation begins with the parent. It looked like I was the one who needed more regulation and resilience.

**September 2021**

I had my third meeting with the functional medicine doctor and showed continued improvement. He noticed I could benefit from central nervous system support. He sensed the underlying stress in my demeanor and body.

**October 2021**

I found a new therapist. This therapist had experience in trauma, EMDR, brain-spotting, and attachment. She was also a mother with three children. During a therapy session, I shared a recent story about my daughter. I shared about our difficulty with even simple daily routines. The recent challenge was putting on soccer cleats, shin guards, and socks. I described how this event left us both dysregulated and in tears. I asked my therapist, "What else can I do when we are in this place?" The therapist carefully listened to the story. She calmly suggested next time I do the following: "Take a deep breath, touch your daughter's hand, look her in the eye, and say in a calm and quiet voice, "What is it you need?" That phrase became oxygen to me.

**December 2021**

I continued therapy. After sharing my birth story with my therapist, I began to feel empathy for that young mother. I started healing in my mind and heart. After seven years of struggle, I felt like I was crawling out of a dark pit and could see the light. We tried brainspotting during a therapy session. My therapist introduced me to the Eight C's of Self Leadership from the IFS therapy model. Within the IFS framework, Dr. Richard Swarts identifies the eight Cs as confidence, calmness, creativity, clarity, curiosity, courage, compassion, and connectedness (Schwartz & Sweezy, 2020).

**January 2022**

I was still battling feelings of helplessness with my older daughter. Our family went on a trip. I felt shame about getting frustrated at my daughter while working together on schoolwork. I had learned the eight C's but hadn't internalized them.

**February 1, 2022**

On the last day of our family trip, we went to Disneyland. My husband was supposed to be the one waiting in line. But somehow found myself in line for Thunder Mountain with my older daughter. My daughter was hesitant about going on the ride. I felt panic. The helpless feelings were flooding back. However, this time, I remembered the important question. "What is it you need?" I put myself in my daughter's shoes. I realized my daughter was feeling scared. My daughter needed reassurance. I was able to stay confident, courageous, and calm. I grew up close to Disneyland and had been on that ride a hundred times. I became a storyteller. I recounted how when I was growing up it was my favorite ride! We went on the ride together successfully. My child was delighted and asked to go again with my husband. I felt a sense of relief and pride that I had never felt with my older daughter. I assumed the role of a reassuring mother who could confidently stay with her through adversity.

**February 2, 2022**

The next day, we drove home from Disneyland. I volunteered to drive for two hours on a large and crowded highway. The conditions were windy, and tumbleweeds flew toward us on the highway. I confidently drove the car without experiencing anxiety or panic. This was the first time I remembered driving without panic in over six years.

**March 2022—July 2022**

I continued therapy. I read helpful books, wrote in a journal, learned about attachment theory, and gained tools. I continued to grow. My daughter continued to grow. Our bond grew stronger roots.

**July 2022**

My daughter attended a summer camp at an accredited STAR institute specializing in sensory integration. I gathered additional tools for calming inevitable emotional storms. The therapists taught me how staying creative and playful was a superpower. It was nearly impossible to be dysregulated while playing and creating. This became another important tool in my tool belt. There was continued improvement but also sometimes setbacks relationally. I felt ashamed when I failed.

**August—October 2022**

We went on a family trip by the ocean, and I noticed surfers. They showed many qualities of the 8 C's of self-leadership from the IFS model. I imagined surfers after a surfing session. Did I think they spent their whole time talking about their wipeouts? Did they berate themselves for not paddling enough to catch that one wave? I didn't think so. I believed they talked about their best waves of the day, their triumphs. I believed they didn't dwell on the noise of failure. I believed surfers used calmness, creativity, curiosity, confidence, courage, and compassion. They exhibited these behaviors toward themselves while they were surfing and after as they talked about their waves. I realized I wanted to be more like a surfer in my approach to my relationship with my daughter and the many wipeouts I experienced.

**October 2022—Present**

I continue therapy. I have found continued repair in my relationship with my older daughter. There are setbacks, but I now have a more secure attachment with my daughter. I now have tools for regulation and repair. I have changed my path to one where we are no longer helpless but confident and excited to walk together, as it should have been from the beginning.

I was on a path I didn't want to be on. Many mothers are. I had no tools to get on a different path. I needed outside sources of support. "What is it you need?" was my trajectory-changing question. Practitioners should ask patients that question. When you ask, "What is it you need?" you are seeing the person in non-judgmental awareness. You are open to a honest answer.

Secondly, at times, our physical bodies need rebalancing. This notion is not valued in Western medicine. I think our bodies need attention and nourishment, especially after a difficult childbirth. How can we integrate the body into the healing process in mainstream care?

After receiving tools and treatment from two compassionate practitioners, I could access a new way. I am grateful I had the opportunity to experience attunement and healing personally. My desire is to be a beacon of hope for any mother who finds herself on a road of disconnection with herself or her child. Things can get better. I hope practitioners might consider integrating this important question, "What is it you need?" Even if, on paper, the patient's story does not seem traumatic, the story may feel

traumatic and triggering to the patient. Their feelings are real; practitioners can help validate their experience and pull them back into the light.

## References

Schwartz, R. C., & Sweezy, M. (2020). *Internal family systems therapy* (2nd ed.). The Guilford Press.

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### Manuscripts

The Journal for Prenatal and Perinatal Psychology and Health accepts only original material that is not under consideration by any other publications. Articles should be word-processed and transmitted electronically as a Word document to the Editor. The Editor reserves the right to edit manuscripts for length, clarity, and conformity with the journal's style. The author should retain his/her copy. American spelling should be used. The paper should be between 2,000 and 8,000 words with a 100– word abstract and at least three keywords. (See further guidelines for submitting a manuscript in the current APA Publication Manual (2020), specifically, "Author Responsibilities."

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