An Earlier Connection

Making the Case for Engaging Families as Soon as Possible in Pregnancy

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Abstract
The article addresses clinical, neurodevelopmental, and psychological experiences of pregnant parents to build the case for shifting therapeutic approaches to promote the earliest possible connections between parents and their infant. The article emphasizes the rationale for therapeutic interface with families in pregnancy as it relates to stress reduction, behavioral changes, and protective factors for the fetus. Using home visiting as a service model, we focus on the relationship-based nature of the work, challenges, successes, priorities, and strategies for engaging parents in behaviors and activities that promote infant/parent mental health during pregnancy and early infancy.

Pregnancy is a time of profound psychological transformation for women; the anticipation of becoming a parent can bring openness for new parents to make positive changes in their lives that will benefit the developing child. Therapeutic engagement with families during early pregnancy, when key neurodevelopmental processes are underway, and during the perinatal and newborn periods, when the dyadic interactional processes begin taking shape, provide a foundation of infant/parent mental health. Physicians, nurses, Women, Infants & Children (WIC) program staff, childbirth educators, and home visiting program staff have the best opportunities to engage women early in pregnancy and sustain this connection into the baby's early infancy. However, the involvement of other providers and programs is also critical.

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Previously, the belief was that less complex neurological systems, like those for sight, hearing, and motor activities, developed before complex stress response systems. However, recent findings suggest that the differences between stress-exposed babies' brains and their peers emerge almost immediately (Banich & Compton, 2018). For example, maternal depression and intimate partner violence experienced during pregnancy can induce epigenetic changes resulting in stress-response neurodevelopmental patterns (Glover, 2014). Therapeutic programs aimed at improving child outcomes as soon as a woman discovers she is pregnant or even prior to conception may yield the best results.

There are many pathways in which people become parents that can impact how the prenatal period and the process of readiness for parenthood are experienced; however, the

focus of this article is the typical experience of mothers during pregnancy with limited attention to the experience of fathers.

The Importance of Starting Prenatally

National birth data reflect the importance of starting the work with parents prenatally. In 2018, there were approximately 3.8 million births in the US, down by 2% from 2017 (Martin et al., 2019). During this same period, the birth rate was 11.6 per 1,000 population, and the unmarried birth rate for women 15–44 years old was 40.1 births per 1,000 in 2018, down by 2% from 2017. Approximately 10% of infants were born preterm (less than 37 completed weeks of gestation), and 42.3% of all pregnancies used Medicaid as a payment source for the delivery (Martin et al., 2019). In higher-income countries, 7–12% of women experience a depressive episode during pregnancy and 13–19% of women experience a depressive episode within the first year after childbirth, making depression one of the most common conditions experienced by women during pregnancy and the following postpartum year (Gavin et al., 2005).

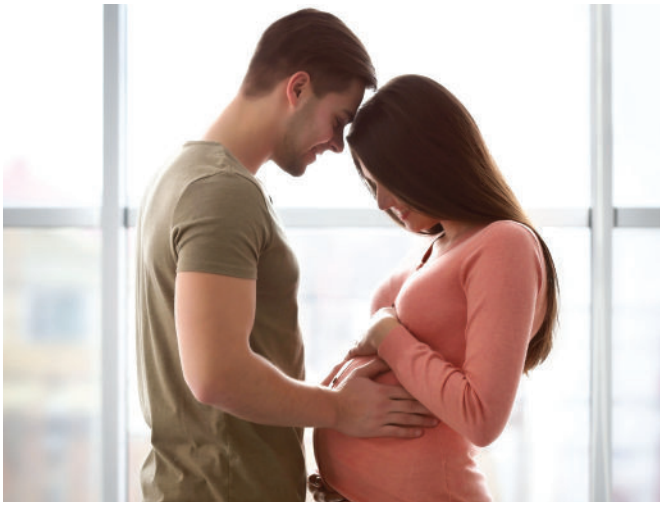
Maternal Morbidity and Mortality

Persistent racial disparities place Black women at increased risk of dying during pregnancy or by their child's first birthday compared to their non-Hispanic, White counterparts (Keating et al., 2020). In the US, maternal mortality among Black women (40.8 per 100,000 live births) is more than 3 times higher than among White women (13.2 per 100,000 live births). The leading causes of these deaths among Black women are heart and circulatory problems; for White women, mental health problems (including suicide and overdose/poisoning) predominate. Complications from cesarean deliveries (C-sections) also play a significant role in maternal mortality, along with medical errors, ineffective treatments, and poor care coordination (Keating et al., 2020).

On the basis of current data, promising policies to support pregnant parents include increasing Medicaid eligibility levels for pregnant women and extending coverage for new mothers, ensuring states' Medicaid plans include reimbursement for maternal depression screening and care by doulas, increasing WIC participation, ensuring protections for pregnant workers; expanding access to paid family and medical leave, and expanding access to home visiting services (Keating et al., 2020).

Additional recommended practices include

- implementing comprehensive, multidisciplinary approaches that engage diverse stakeholders and community members in planning and developing solutions;
- expanding training for the health care workforce on the experience of racism in medical care, implicit bias (unconscious attitudes that can lead to negative behavior toward Black and Hispanic people), and culturally competent care;
- supporting more research into promising practice models such as doula care and breastfeeding support;



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The anticipation of becoming a parent can bring openness for new parents to make positive changes in their lives that will benefit the developing child.

- building on successful public awareness campaigns focusing on safe infant sleep practices;
- expanding and improving state Maternal Mortality Review Committees; and
- improving data collection to facilitate monitoring of critical indicators and disaggregation of data by race and ethnicity (Keating et al., 2020).

The birth and maternal morbidity/mortality data and racial disparity information reflect the need to address high-risk populations early. In the US, 77.5% of prenatal care is initiated in the first trimester (Martin et al., 2019), making it an opportune time to engage new parents.

Sensitive Periods for Parenting in the Prenatal Period:

The term *sensitive periods* is often used to refer to the development of children, that is, limited time windows in development when the developing child is particularly responsive to specific types of experiences. Understanding sensitive periods helps to explain how early experiences have strong effects on the developing brain and behavior. Sensitive periods are commonly thought of as periods of brain reorganization that occur during infancy and again in adolescence. There are numerous examples of the effects of early deprivation and later structural and functional disturbances during these sensitive periods on vision, attachment relationships, social mores, and language, to name a few (Bornstein, 1989; Troller-Renfree & Fox, 2017). However, researchers typically have not thought as much about the existence of sensitive periods for parenting, which can have significant implications for parents' ability to adapt to their parenting role and can offer insights into opportunities for intervention, just as it is possible to create interventions for children during their sensitive periods.

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The first mention of a sensitive period for parenting newborns came from Kennell and colleagues in 1975 (Kennell et al., 1975). They wrote of the experiences of mothers who were separated from their newborns and compared them with mothers who were not separated at birth. They described a "sensitive period" shortly after birth as a time that could have lasting effects on attachment and possibly impact the baby's development. Although later research did not support their initial assertions (e.g., Myers, 1984), a large body of research supports the benefits of practices such as kangaroo care on infant and parent outcomes (Boundy et al., 2016), and there has been increased interest in the biological preparation for and transformation to parenthood. For example, biological and behavioral components of these sensitive periods are affected in the transition from pregnancy to postpartum and during early contact between mothers, fathers, and their babies.

Mothers show many neurohormonal and brain changes during pregnancy and the postpartum periods. Increases in oxytocin during pregnancy and delivery underpin the attraction to their baby, milk production, and their psychological well-being. Brain organization of the functional network connections that support their relationship with their baby changes dramatically and grey matter volume increases. Fathers also show changes in neurohormonal responses to pregnancy and delivery, with decreases in testosterone and increases in oxytocin and vasopressin. Recent research has shown a relationship between fathers' testosterone levels and caregiving of their babies. Their brains also change in their functional network connectivity, especially in the cognitive–social areas of the brain and show increases in grey matter. Thus, mothers and fathers have significant neuronal and physiological changes that are consistent with sensitive periods and brain plasticity (Barba-Müller et al., 2019; Feldman, 2015, 2017; P. Kim et al., 2014; S. Kim & Strathairn, 2016; Kuo et al., 2018; Swain, 2011; Swain et al., 2007, 2014).

Parents' neuroendocrine responses and brain connectivity are also significantly shaped by *biobehavioral synchrony* with their infant. That is, social interaction, caregiving, and play with their babies, or lack thereof, alters parental neurobiology. For example, mothers' subcortical and cortical reward networks, which involve motivation, mentalization, and the ability to see the situation from the baby's point of view, change during interactions with their infants (Feldman, 2015, 2017; Hoekzema et al., 2017). Fathers' testosterone decreases and stays decreased both in the newborn period and as they engage in more caregiving activities in the months following birth (Gettler et al., 2011; Kuo et al., 2018).

These neurobiological changes underlie and parallel the transformative psychological experiences of parents during the pregnancy and postpartum periods. The implications of these brain- and behavior-shaping sensitive periods are now being extensively explored, emphasizing the need for mothers and fathers to receive nurturing supports during pregnancy and post-birth in order to appropriately adapt to parenthood. Furthermore, psychosocial stress and health behavior changes, for example, sleep disruptions, changes in physical activity and increased stressful events with caring for a baby can lead to chronic stress. These changes can create an "inflection point" for obesity and depression and suggest that what happens during these parenting-related sensitive periods may affect long-term health outcomes (Saxbe et al., 2018). From this perspective, pregnancy and early parenting provide critical opportunities to support parents in ways that may change their later health and psychological outcomes.

Psychological Transformation During Pregnancy

Psychological transformation during pregnancy changes one's relationship to one's own body, significant others, society, and self. Although pregnancy is a time of emotional disequilibrium, it is also an opportunity for positive change. In this section, we use Reva Rubin's (1976) conceptualizations of the tasks of pregnancy to understand the mother's experience better; for additional perspectives, the reader is encouraged to see Slade et al., (2009), Slade and Sadler (2019), and Lieberman et al. (2020).

Psychological Goal of Pregnancy: Maternal Role Attainment

The successful psychological transition during pregnancy results in the woman incorporating the role of mother into her identity. Rubin (1976) described four major tasks of maternal role attainment: seeking safe passage through the pregnancy for herself and her baby, ensuring the baby is accepted by important others, "binding-in" or building of the awareness of and the emotional investment to the unborn child, and development of the ability to give of herself to her baby. Recognition of these tasks provides opportunities to support the mother and her developing relationship with her infant.

Adaptation to Pregnancy

Becoming pregnant is generally welcomed, but reactions to being pregnant are framed by a host of current and historical personal, interpersonal, and psychosocial experiences. Better adaptation is associated with readiness to being pregnant (Messer et al., 2005), physical health, social support, and financial resources (Centers for Disease Control and Prevention, 2021). For many women, pregnancy is a time to re-examine their current and past relationships, particularly with their own mothers (Davis & Narayan, 2020; Lieberman et al., 2020; Slade & Sadler, 2019). Stressors such as depression, anxiety, interpersonal violence, a history of pregnancy loss, concerns about the health and development of the fetus, or a conflicted relationship with the woman's mother can interfere with adaptation (Slade & Sadler, 2019). However, the mother's experience of benevolent caregiving in her childhood can confer resilience to her during pregnancy (Narayan et al., 2018). Psychological maturity helps the pregnant woman to tolerate ambivalent feelings about the pregnancy, reflect upon and flexibly consider the infant's needs, and form a "balanced" idea of who the baby is (Foley & Hughes, 2018; Fonagy et al., 1991; Zeanah et al., 1990). All of these factors can affect the mother's attitude about the pregnancy and the developing infant, and they may evolve throughout pregnancy.

First Trimester

The first trimester, encompassing conception through the first 12 weeks of pregnancy, is a period of rapid fetal development and is considered a vulnerable time for the fetus. The woman's body does not look noticeably different to others, but common symptoms such as fatigue, breast tenderness, changes in appetite, nausea, constipation, urinary urgency, and mood swings are uncomfortable (Office on Women's Health, 2019). Mothers typically focus on these body changes, and they also may experience ambivalence or anxiety about the pregnancy or worry about the impact on finances, work, or educational goals (Mayo Clinic, 2021).

Despite these physical changes, the pregnancy and baby may feel abstract or unreal (Rubin, 1976). Due to cultural mores or wanting to "make sure" they are pregnant, many women do not disclose pregnancy in the first trimester (notably, 10–15% of pregnancies result in miscarriage in the first trimester; American College of Obstetricians and Gynecologists, 2021; Office on Women's Health, 2019). Although ultrasound procedures are increasingly offered in the first trimester for medical reasons (American College of Obstetricians and Gynecologists, 2021), the impact of ultrasounds on prenatal health behaviors, maternal–fetal attachment, and interest in the infant is mixed (Denbow, 2019). Rubin (1976) posited that the first trimester goal is to "bind in" to the idea of being pregnant, a precursor to "binding-in" with the child. By the end of the first trimester, the goal is for the mother to recognize and accept that she is pregnant.

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Therapeutic programs aimed at improving child outcomes as soon as a woman discovers she is pregnant or even prior to conception may yield the best results.

Second Trimester

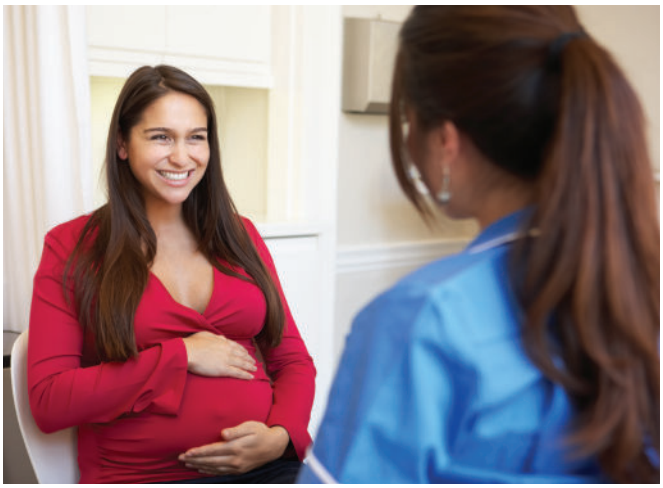
During the second trimester, weeks 13–28, symptoms associated with the first trimester usually subside and mothers report increased energy and sense of well-being. As the abdomen expands, body changes become more apparent and can include skin changes and swelling of hands, feet, or face (Office on Women's Health, 2019). For many (but not all) mothers, these changes are a source of pride. At about 16–20 weeks, quickening occurs—the mother's ability to feel the fetus move marks that the baby is, indeed, real.

During this trimester, the mother's emotional investment is drawn toward the fetus and she develops a more coherent sense of becoming a mother (Rubin, 1976). Typically, she experiences fantasies about the baby's appearance and personality, which become more developed as the pregnancy progresses. Studies of prenatal perceptions of the baby's personality show surprising stability through the birth transition (Benoit et al., 1997; Zeanah et al., 1985, 1990).

Prenatal perceptions of the baby vary widely. Some mothers have difficulty describing the baby, others may imagine specific qualities (e.g., strong-willed or independent), and others elaborately detail the baby's personality and behavior. These perceptions can suggest how the mother is adapting to pregnancy, her reflective capacity, and her developing attachment toward the infant (Benoit et al., 1997; Fonagy et al., 1991; Slade & Sadler, 2019; Zeanah et al., 1985, 1990). It is interesting that the descriptions of the baby are not related to the intensity or frequency of fetal movement, suggesting the mother's own experiences inform the expectations about the baby (Zeanah et al., 1985).

Third Trimester

The third trimester, weeks 28–40, is typically physically uncomfortable. The fetus grows rapidly, and the mother



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Home visitors have unique opportunities for long-term involvement with families over the entire perinatal period.

gains the most weight during this period. She may experience difficulty sleeping, digestive discomforts, frequent urination, fatigue, shortness of breath, swelling of extremities, trouble moving, and swollen veins (Mayo Clinic, 2021). She focuses on labor and delivery and may have anxiety dreams as she prepares to bring the baby home. Mothers often experience conflicting feelings. On the one hand, there is an urgency to "let go" of the pregnancy. Conversely, there may also be a strong desire to hold on to the pregnancy coupled with fears for herself and her child with the impending labor and delivery (Rubin, 1976).

Preparation for the infant's arrival, or "nesting," includes ensuring there are adequate resources and supplies for the baby. During the third trimester, the task of "giving of oneself" becomes most prominent and signals the mother recognizes "I am going to be a mother" (Rubin, 1976). This almost complete focus on the infant was described by Winnicott as "primary maternal preoccupation" (Winnicott, 1956).

Labor and Delivery

There are a wide variety of personal and cultural expectations about labor and delivery. A positive perception of the birth experience is related to more positive perceptions of the infant. Similarly, a negative birth experience may result in disappointment in the birth experience and a negative self-image. Postpartum mood and perception of the baby as easy or difficult can be related to how closely a woman's self-perceived behavior during labor matched her desired behavior (Reisz et al., 2015; Zeanah et al., 1985).

Fathers

Like mothers, fathers experience changes in role, responsibilities, and expectations, and for many fathers, the prenatal period is stressful (Condon et al., 2004; O'Leary, 2015). Condon (2008) identified four tasks for fathers during the pregnancy period: developing an attachment to the fetus, adjusting to the dyad becoming a triad, conceptualizing the self as "father," and determining the type of father he will become. Some fathers experience significant anxiety or mood symptoms or may feel excluded from prenatal services, but most welcome opportunities to support the mother and to establish their relationship with the infant (O'Leary, 2015). Paternal/partner involvement in pregnancy is associated with a number of positive outcomes for mother and baby, including improved maternal health behaviors (Kortsmit et al., 2020; Mincy, 2015), reduced maternal stress (Ghosh et al., 2010), and reductions in infant mortality (Alio et al., 2011; Mincy, 2015). A report from the Harris Professional Development Network (2021) summarized research on fathers' engagement and impact on attachment; children's social–emotional, cognitive, and language development; and the co-parenting relationship. However, more research is needed to better understand fathers' experiences during pregnancy in general, and especially for adolescent fathers (Lohan et al., 2010).

Fourth Trimester

The transition after birth, described as the "fourth trimester" (Verbiest et al., 2017), is a period of significant physical, psychological, and social adjustments for the mother and infant. Notably, not all mothers feel love for their babies at birth—those feelings are affected by a number of issues, including the mother's previous relationship experiences, prenatal and birth experiences, and social support, as well as the hormonal changes during pregnancy and postpartum period—but the majority of mothers feel love for the infant within the first few months after birth (Galbally et al., 2011; van IJzendoorn & Bakermans-Kranenburg, 2020).

Engagement: Home Visitation Programs and Maternal/Fetal Connection

The neurobiological and psychological transformations that occur during pregnancy and the postpartum period not only provide opportunities to support the mother's engagement with her pregnancy and developing fetus but also to engage new parents in services. As noted previously, many professionals interact with pregnant women, but in this section, we emphasize home visitors, as they have unique opportunities for long-term involvement with families over the entire perinatal period. Engagement typically means the family actively takes part in the program according to the intended schedule and the scope of services. However, family engagement has been a significant challenge for home visiting programs and is a critical issue in the field of prenatal to 5 services (Maternal, Infant, Early Childhood Home Visiting Technical Assistance Coordinating Center, 2015). The effectiveness of evidence-based programs is predicated on the completion of the entire program, but some reports show as many as 40–50% of families leave home visitation programs during the first year (Boller et al., 2014; Duggan et al., 2007). Because of the high rate of withdrawal

from services, understanding how to engage families in programs and with their pregnancy is an essential aspect of program implementation.

Reasons for entering home visiting services vary, but common themes are to have a healthy baby, a healthy pregnancy, and to learn more about parenting and child growth and development. The opportunity for added social support is also an oft-cited reason. However, many women and families want tangible resources as well, such as the opportunity to finish school and develop job skills, gain access to community resources, and family planning services (Tandon et al., 2008). When home visitors align with the family's goals, engagement and continuation of services are higher (Burrell et al., 2018; O'Brien et al., 2012).

Multiple studies have explored how attributes of the home visitor affect engagement in services (Cho et al., 2017, Latimore et al., 2017). These qualities convey that the professional is engaged in the service activities and respects, values, and cares about the client. The following list is a starting point for "ways of being" as home visitors that are relevant to all professionals working with pregnant parents:

- show empathy
- use nonjudgmental listening/joining/hearing her story
- be predictable
- use check-ins—text, phone calls, emails
- hold the client/family in mind—"I've been thinking about you."
- be genuine
- follow through

Living in a disadvantaged community with economic deprivation and elevated child health and safety risks is associated with lower levels of program participation (Cho et al., 2017; Maternal, Infant, Early Childhood Home Visiting Technical Assistance Coordinating Center, 2015). One strategy to make early connections and establish trust with families in these communities is to partner with community-based organizations (CBOs), such as ethnic community centers, tribal centers, faith-based organizations, WIC supplemental nutrition programs, community prenatal care clinics, family planning clinics, and community outreach centers. Strategies such as offering onsite services 1 day per week or taking part in community forums and events can improve the recruitment of families into services. A family that trusts a CBO may find confidence and a sense of commitment to programs that partner with the CBO, and such partnerships may facilitate long-term engagement in services.

Experiences of Black, Indigenous, and Persons of Color

Engaging Black, Indigenous, and persons of color in services requires intentional action. Experiences of poor or harmful care have led to mistrust of the health care delivery system. For example, a study (McLemore et al., 2018) found that during prenatal care, Black women report:

- feeling disrespected, dismissed, or treated rudely
- stigmatized for the lack of a support person
- unmet informational needs
- an overall stressful experience and "being given the run around."

A growing body of evidence shows that the experience of discrimination during prenatal care experiences adversely impacts women's long-term health and the health of the child (Sonderlund et al., 2021). Strategies to mediate and alter care delivery from a negative to a positive experience for women of color, offered by the women in the study by McLemore and colleagues (2018), include providers being respectful, listening to them, and providing clear and complete information about all aspects of their pregnancy and care. These strategies are emphasized in home visiting, and home visitation services are generally experienced as more accommodating and welcoming than formal clinical care (Ammerman et al., 2006). It is crucial to examine personal and programmatic approaches that bias or promote the provision of respectful care.

Individualize, Adapt, Allow Choices, Shared Decision-Making

Women want to be involved in their care and have a healthy pregnancy and a healthy baby, and women who are working on their own goals are more committed to involvement in home visitation programs. However, programs often have a pre-established agenda, and many programs enroll a disproportionate number of women with depression or other mental health challenges (Burrell et al., 2018) who may have difficulty meeting program expectations of involvement. Individualizing and adapting care to each client's unique needs may promote a stronger connection between provider and client and improved program retention (O'Brien et al., 2012). The quality of the relationship, perceived by the client, predicts the amount of time spent in a program (Korfmacher et al., 2007). Co-creating goals, adapting to cultural and generational values, and adapting the visit to the parent's emotional availability are all ways to individualize care. It is helpful to remember two guiding principles offered by an early leader in infant mental health, Dr. T. Berry Brazelton: all parents have strengths and want to do well by their child (Brazelton, 1999). Furthermore, in the words of John Bowlby, "If a community values its children, it must cherish their parents" (Bowlby, 1951, p. 84).

Interventions That Promote Engagement

Dr. Kathryn Barnard, another early infant mental health leader, believed that supporting and building the parent–child relationship was an essential component of overall child health outcomes and that pregnancy was the right time to begin. Drawing on the work of nurse pioneers (e.g., Reva Rubin), the Promoting Maternal Mental Health During Pregnancy (PMMH)

program was the culmination of Dr. Barnard's dream to begin psychosocial intervention during pregnancy (Solchany, 2013). The PMMH program includes a thorough, guided assessment that emphasizes client time for reflection, choices, and shared decision-making and leads to an individualized intervention plan. Together, the provider and client choose interventions that address specific needs identified during the assessment. Some activities are creative while others are more defined and structured. The flexibility and adaptability to each person's strengths, needs, and desires are paramount to the ease and success of using the program. Interventions vary from Parenting Observation, which involves observing other parents in stores, offices, playgrounds, or friends/family members to help the parent think about the parenting qualities he or she wants to exemplify, to Circle of Safety, which examines the safety of a parent's support network and environment. All interventions are designed to support maternal role attainment and accomplish the tasks of pregnancy. Schaffer and colleagues (2012) used the PMMH program as one of the "Four Pillars" to build the nurse–client relationship. The results reported better health outcomes for both mothers and babies and a high level (>90%) of satisfaction with their Pregnant and Parenting Teens program. The PMMH program is used by nurse home visitation programs and Early Head Start programs and can be used with pregnant mothers in any service setting.

Summary

In this article, we have described social, neurobiological, and psychological evidence for providing interventions to support the mother, infant, and family as early as possible. Pregnancy and the perinatal period set the stage for optimal parent and baby outcomes. Providing essential information, emotional support, and opportunities for learning about the mothers' experience and that of their baby are essential to optimizing health, relationships, and psychological well-being.

Learn More

Promoting Maternal Mental Health During Pregnancy
(revised edition 2013)
https://www.pcrprograms.org/promoting-maternal-health-during-pregnancy

Make Room for Baby: Perinatal Child–Parent Psychotherapy to Repair Trauma and Promote Attachment
A. F. Lieberman, M. A. Diaz, G. Castro, & G. O. Bucio (2020)
Guilford Press

Centers for Disease Control and Prevention Pregnancy Website
https://www.cdc.gov/pregnancy/index.html

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