

WOMEN'S HEALTH

Perinatal intrusions: A window into perinatal anxiety disorders

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Mental health is the leading cause of preventable perinatal maternal mortality. Studying perinatal intrusions can shed light on determinants of maternal mental health.

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From the covers of parenting magazine to frescos of supremely serene mothers, advertising and most cinematic and visual arts paint the peripartum as a state of perpetual maternal bliss. For many women (due to word limits this article refers to birthing people as mothers and women, but we acknowledge that people of all genders can give birth and nonbirthing parents can be mothers) the peripartum, which extends from conception through pregnancy and childbirth to early motherhood, is indeed associated with much joy and positive life changes. However, for nearly all women, it is also a period associated with increased exposure to stressors (e.g., financial impact on earning) and higher levels of perceived stress, which increase throughout pregnancy and peak in the first months of motherhood (1). Heightened stress levels are reliably associated with increased risk for anxiety disorder symptoms (2). The prevalence of perinatal anxiety disorders is rising, now exceeding perinatal depression, especially in low- and middle-income countries (3). What's more, the burden of disease from perinatal anxiety extends across the maternal lifespan and intergenerationally to the child's mental health, making perinatal anxiety a global public health issue.

Yet, despite the scale of the issue, little is known about why women are more susceptible to the onset of anxiety and stress-related mental health problems during this phase in the reproductive lifespan. This is in part because perinatal mental health has long been considered niche. It is not. By the age of 44, 85% of women will have given birth, making perinatal anxiety disorders a clinical and research priority for women and children worldwide.

We propose that perinatal intrusions offer a unique window into the etiology and maintaining factors in anxiety disorders during the peripartum. While not all parents will develop mental health problems during the peripartum, almost 100% of women will experience perinatal intrusions (4). Perinatal intrusions are intrusive thoughts and images of accidental child-related harm. Around 50% of mothers will also experience intrusions of intentionally harming their child (4). These intrusions feel uncontrollable and are extremely distressing to parents. They are also associated with maternal anxiety and with poor child mental health outcomes. Studying perinatal intrusions offers a unique window into perinatal anxiety disorders, because intrusive cognitions (i.e., unwanted past- or future-oriented thoughts, memories, and images) are a core feature of anxiety disorders. Identifying determinants of the progression from normative to functionally impairing intrusions can help identify women at risk for perinatal anxiety disorders.

COGNITIVE VULNERABILITIES

To elucidate determinants of women's heightened vulnerability to intrusions during the peripartum, we adopt a diathesis-stress framework (Fig. 1). Diathesis-stress models of mental health assume that any vulnerability factor will trigger the emergence of a specific mental health problem only when the vulnerability co-occurs with excessive stress exposure. For perinatal intrusions, interacting cognitive and biological vulnerability factors should be considered within the context of heightened exposure to stressors that are

unique to the peripartum (e.g., infant crying), as well as those that are amplified in the peripartum (e.g., economic disadvantage). It is critical to understand interindividual differences in the interaction between these cognitive vulnerabilities and perinatal biological changes that lead to healthy mother-and-child dyads in some women, while derailing the mental health trajectory across a lifetime in other dyads.

Cognitive models of intrusive thoughts suggest that a core function of intrusions is to alert individuals to salient, survival relevant information. For example, the fleeting urge to jump off a multistorey balcony can sensitize us to a real and present danger of standing in close proximity to a lethal drop. In the peripartum, parents' singular preoccupation is their fetus/infant's safety and wellbeing, over and above personal safety. This concern for dangers in the caregiving environment, cognitive theorists argue, gives rise to unique intrusions of infant-related harm. Yet, despite potentially conferring an evolutionary advantage by promoting infants' survival, intrusions are highly distressing.

The level of distress evoked by intrusions varies across individuals, and higher levels of distress have been associated with poorer mental health outcomes. Intrusion-related distress is heightened in individuals who show maladaptive appraisals (e.g., "I am a risk to my child"), (5) especially in those with high levels of thought-action fusion (4) (that is, the tendency to equate having a thought about an action with engaging in the action). These parents then are more distressed by infant-related harm intrusions because they believe more strongly that they will hurt their infants, despite research demonstrating this is not the case [(4); the exception are rare forms of postpartum psychosis and suicidal depression, where infant-related

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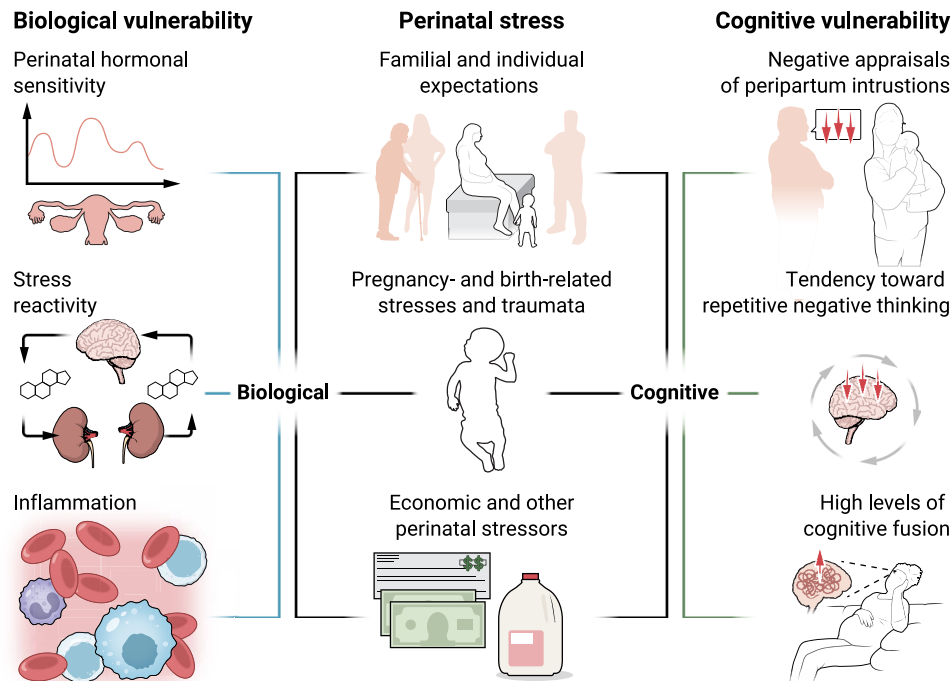


Fig. 1. The diathesis-stress model of perinatal intrusions. Perinatal stressors interact with cognitive and biological vulnerability factors to give rise to perinatal intrusions and increase women's vulnerability to mental health problems during the perinatal period. Illustration credit: Austin Fisher/Science Advances.

harm thoughts can be part of the delusion, becoming compatible with the affected parent's belief system]. Intrusion-related distress is further reinforced in mothers with a tendency for repetitive negative thinking, which is the tendency to worry about and ruminate on these unwanted intrusions and associated maladaptive appraisals. Like intrusive cognitions, both the tendency for thought-action fusion and repetitive negative thinking have been associated with poorer cognitive control, or individuals' capacity to regulate their thoughts and behaviors in line with their goals. The shared underlying cognitive connection across these risk factors suggests a cognitive phenotype that heightens women's vulnerability to progress from the experience of normative intrusions to intrusions associated with functional impairment, including poorer mother-infant bonding.

The adverse impact of intrusions and the distress they cause on maternal mental health may be heightened under stress. Evidence emerging from the COVID-19 pandemic shows that the diathesis-stress association appears potentiated during the peripartum. Pandemic-related stress was associated with more symptoms of anxiety and depression during pregnancy (6), as well as postpartum intrusions up to 22 months postpartum (7).

Stress was more strongly related to mental health problems in 742 women characterized by greater cognitive vulnerability (including repetitive negative thinking) during the peripartum compared to 742 country-, age-, and gender-matched women who were not pregnant during the pandemic (6). A possible explanation for the potentiated impact of cognitive vulnerability during the peripartum is the interaction between this cognitive phenotype and biological changes during the peripartum.

THE ROLE OF HORMONES

The peripartum occurs within a hormonal and neurobiological milieu that is unlike any other developmental phase. During pregnancy, the levels of exposure to estrogens and progesterone are higher than the cumulative exposure to these hormones throughout the nonpregnant lifespan. In the postpartum period, these hormones decline in an acute and dramatic fashion and are coupled with reductions in the stress hormone, cortisol. Hormonal changes, in particular, the sudden decline in estrogens and progesterone, have been linked to heightened risk for postpartum depression in a subset of women. However, no consistent evidence for abnormalities in hormonal levels or fluctuations has been detected in women

with postpartum depression. Rather, it appears that some women experience adverse psychological reactions to normative changes in hormones, termed hormone sensitivity (8), that are probably mediated by multiple biological pathways, including changes in neurosteroids, the immune system, and the hypothalamic-pituitary-adrenal (HPA) axis. Identifying who is susceptible to hormone sensitivity, and why, is crucial to implementing early intervention, and even prevention, strategies to bolster women's mental health during the peripartum.

In this regard, viewing women's mental health through a lifespan lens could be beneficial, given that hormone sensitivity may be more likely in those who have experienced early life stress, perhaps due to interactions between the HPA and hypothalamic-pituitary-gonadal axes (9). Psychological consequences of hormonal sensitivity are associated with the emergence or exacerbation of poor mental health in other periods of hormonal flux across the female lifespan, including during specific phases of the menstrual cycle, as well as during adolescence and perimenopause. Taking a lifespan perspective can also help elucidate the potential interacting effects of hormonal and cognitive vulnerabilities during the peripartum. In nonperipartum samples, a link exists between hormonal fluctuations and the

cognitive processes that underpin anxiety disorders and intrusive thoughts. Repetitive negative thinking increases over the menstrual cycle during periods of high but declining ovarian hormones in women with generalized anxiety disorder (10). Similarly, intrusive memories and thought intrusions fluctuate across the menstrual cycle (11). Recognizing the similarities between the peripartum and the menstrual cycle with respect to their potential to elicit negative psychological consequences due to hormonal sensitivity can advance our mechanistic understanding of the hormone-cognition interactions that give rise to intrusive thoughts and ultimately aide early identification of those at risk for peripartum affective disturbances.

A UNIQUE OPPORTUNITY

Intrusive cognitions, including thoughts, memories, and images, constitute a shared feature across anxiety, affective, and stress-related disorders. Yet, our understanding of intrusions is limited because their onset is unpredictable. Perinatal intrusions, in contrast, are highly predictable, with virtually all women experiencing them. This makes this period a unique opportunity to study

the factors that lead to the onset and maintenance of intrusions. Advances in this field of research have the potential to inform not only models of perinatal mental health but also advance our understanding of intrusive cognitions in women's mental health across the lifespan.

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