Childbirth-related posttraumatic stress disorder: definition, risk factors, pathophysiology, diagnosis, prevention, and treatment

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Psychological birth trauma and childbirth-related posttraumatic stress disorder represent a substantial burden of disease with 6.6 million mothers and 1.7 million fathers or co-parents affected by childbirth-related posttraumatic stress disorder worldwide each year. There is mounting evidence to indicate that parents who develop childbirth-related posttraumatic stress disorder do so as a direct consequence of a traumatic childbirth experience. High-risk groups, such as those who experience preterm birth, stillbirth, or preeclampsia, have higher prevalence rates. The main risks include antenatal factors (eg, depression in pregnancy, fear of childbirth, poor health or complications in pregnancy, history of trauma or sexual abuse, or mental health problems), perinatal factors (eg, negative subjective birth experience, operative birth, obstetrical complications, and severe maternal morbidity, as well as maternal near misses, lack of support, dissociation), and postpartum factors (eg, depression, postpartum physical complications, and poor coping and stress).

The link between birth events and childbirth-related posttraumatic stress disorder provides a valuable opportunity to prevent traumatic childbirths and childbirth-related posttraumatic stress disorder from occurring in the first place. Childbirth-related posttraumatic stress disorder is an extremely distressing mental disorder and has a substantial negative impact on those who give birth, fathers or co-parents, and, potentially, the whole family. Still, a traumatic childbirth experience and childbirth-related posttraumatic stress disorder remain largely unrecognized in maternity services and are not routinely screened for during pregnancy and the postpartum period. In fact, there are gaps in the evidence on how, when, and who to screen.

Similarly, there is a lack of evidence on how best to treat those affected. Primary prevention efforts (eg, screening for antenatal risk factors, use of trauma-informed care) are aimed at preventing a traumatic childbirth experience and childbirth-related posttraumatic stress disorder in the first place by eliminating or reducing risk factors for childbirth-related posttraumatic stress disorder. Secondary prevention approaches (eg, trauma-focused psychological therapies, early psychological interventions) aim to identify those who have had a traumatic childbirth experience and to intervene to prevent the development of childbirth-related posttraumatic stress disorder. Tertiary prevention (eg, trauma-focused cognitive behavioural therapy and eye movement desensitization and reprocessing) seeks to ensure that people with childbirth-related posttraumatic stress disorder are identified and treated to recovery so that childbirth-related posttraumatic stress disorder does not become chronic.

Adequate prevention, screening, and intervention could alleviate a considerable amount of suffering in affected families. In light of the available research on the impact of childbirth-related posttraumatic stress disorder on families, it is important to develop and evaluate assessment, prevention, and treatment interventions that target the birthing person, the couple dyad, the parent-infant dyad, and the family as a whole. Further research should focus on the inclusion of couples in different constellations and, more generally, on the inclusion of more diverse populations in diverse settings. The paucity of national and international policy guidance on the prevention, care, and treatment of psychological birth trauma and the lack of formal psychological birth trauma services and training, highlight the need to engage with service managers and policy makers.

Key words: delivery, dissociation, fear of birth, infant, mother, negative birth experience, obstetrical complications, operative birth, parent, poor coping, pregnancy, PTSD, severe maternal morbidity, tokophobia, trauma informed care, traumatic birth

Introduction

Worldwide, more than 140 million births occur every year.[1] To reduce discrimination against women, 1 of the 8 Millennium Development Goals of the United Nations was to improve maternal health.[2] The World Health Organization states that every woman has "the right to the highest attainable standard of health, which includes the right to dignified, respectful health care."[3] In intrapartum care, this means striving for a positive childbirth experience.[4] However, pregnancy and birth can involve complications that lead to morbidity or mortality. Global rates of infant mortality are currently 2.9%, the maternal mortality rate is 0.2%, and the near-miss maternal mortality rate ranges from 0.4% to 1.6%.[5–8]

The physiological processes of labor and birth involve stress hormones. In late labor, stress hormones, such as epinephrine, prolactin, and cortisol, naturally increase to promote contractions, facilitate the effect of oxytocin, and promote physiological changes in the newborn that maximize their chances of surviving the transition through the vaginal canal and establishing respiration.[9] However, additional stressors during labor, such as obstetrical complications, have the potential to interfere

GLOSSARY OF TERMS

PTSD Posttraumatic Stress Disorder
Psychological birth trauma Interactions and/or events directly related to childbirth that cause overwhelming distressing emotions and reactions with negative impacts on a woman's health and wellbeing
Childbirth-related PTSD Symptoms of PTSD that develop after, or as a direct consequence of, having had a traumatic birth
Trauma-informed care Based on 4 key principles (the 4 Rs): realisation about trauma, recognition of the signs of trauma, response to trauma and resisting re-traumatization
DSM-5 The Diagnostic and Statistical Manual of Mental Disorders (5th edition) of the American Psychiatric Association
ICD-11 The International Classification of Diseases (11th revision), published by the World Health Organization
Dissociation A complex array of reactions to trauma, including depersonalization, derealization, and emotional numbness
CBT Cognitive behavioural therapy, a family of therapies including cognitive processing therapy, prolonged exposure therapy, and image rehearsal therapy

with or disrupt those normal physiological processes.

Traumatic birth and posttraumatic stress disorder: definitions

Studies show that between 9% and 50% of mothers report that their birthing experience was traumatic.[10,11] A traumatic birth has been defined as "a woman's experience of interactions and/or events directly related to childbirth that caused overwhelming distressing emotions and reactions, leading to short- and/or long-term negative impacts on a woman's health and wellbeing."[12] Another approach is to use psychiatric diagnostic criteria for traumatic stressors, such as the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, (DSM-5) criteria in which childbirth is deemed traumatic if there is a perceived threat to the life of the mother and/or the infant and/or if severe physical injury occurred.[13] Childbirth situations can be objectively traumatic when the life of the mother and/or her newborn is at risk, such as during an emergency cesarean delivery or a preterm birth. However, a traumatic birth experience is subjectively defined.[14] This means that women may have experienced their labor as being traumatic even if, objectively, there was no threat to their life or the life of their newborn.

Traumatic births can lead to the development of childbirth-related posttraumatic stress disorder (PTSD). Parents can also have preexisting PTSD in pregnancy and after birth because of other traumatic events. The literature refers to postpartum PTSD or childbirth-related PTSD interchangeably but the distinction between these is illustrated in Figure 1.[15]

Childbirth-related PTSD refers to the psychological symptoms that develop after or a direct consequence of having had a traumatic birth.[12] PTSD has 4 groups of symptoms, namely reexperiencing the traumatic event, avoidance of reminders of the event, negative alterations in mood and cognition, and hyperarousal. According to DSM-5, to obtain a diagnosis of PTSD, at least 1 reexperiencing and 1 avoidance symptom and at least 2 symptoms of negative alterations in mood and cognition and 2 symptoms of hyperarousal are required (Table). The most recent meta-analysis showed that childbirth-related PTSD affects between 3% and 6% of mothers and 1.2% of fathers.[15] Among mothers, there are greater prevalence rates (12%−13%) for subclinical posttraumatic stress symptoms[15,17] and among those in high-risk groups, such as those who had

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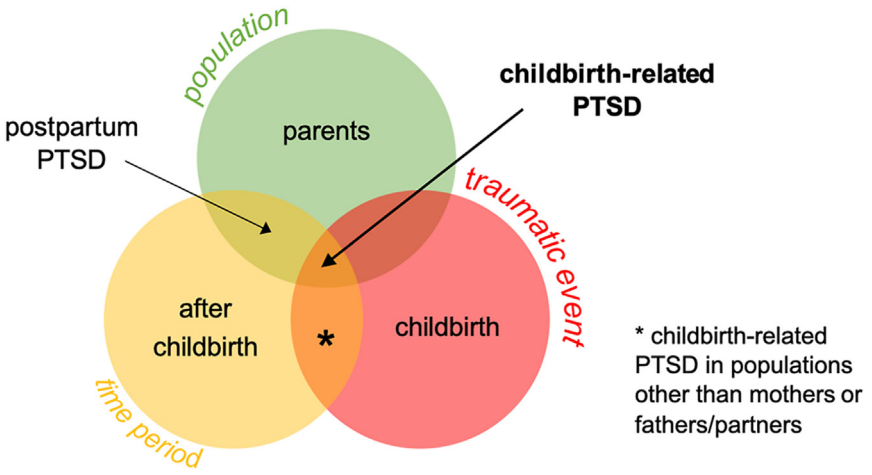
FIGURE 1
Postpartum PTSD and childbirth-related PTSD[15]



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PTSD, posttraumatic stress disorder.

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preterm births, stillbirths, or severe complications such as preeclampsia (16%–19%).[17,18] Studies from low- and middle-income countries suggest that the prevalence rates are similar or higher at between 3% and 20%.[19–21]

Psychological birth trauma and childbirth-related PTSD present a substantial disease burden with childbirth-related PTSD affecting 6.6 million mothers and 1.7 million fathers or co-parents every year worldwide (based on the prevalence rates above).[15] PTSD is an extremely distressing mental disorder, and those affected "struggle to survive each day while battling terrifying nightmares and flashbacks of the birth, anger, anxiety, depression, and painful isolation from the world of [parent]hood."[22] Hence, childbirth-related PTSD has a substantial negative impact on those who give birth, fathers or co-parents, and potentially the whole family. Evidence shows that childbirth-related PTSD is highly comorbid with depression[23] and a fear of subsequent births.[24] Childbirth-related PTSD symptoms are also associated with requests for a cesarean delivery during subsequent pregnancies[25] and reduced breastfeeding.[26] Evidence of the impact of childbirth-related PTSD on the infant is

TABLE
Diagnostic criteria for posttraumatic stress disorder[13,16]

Posttraumatic stress disorder (PTSD)	
DSM-5 (2013)	ICD-11 (2018)
A. Exposure to actual or threatened death, serious injury, or sexual violence	• Exposure to an extremely threatening or horrific event or series of events
B. Intrusions (at least 1 symptom)	• Re-experiencing
C. Avoidance (at least 1 symptom)	• Avoidance
D. Changes in cognition and mood (at least 2 symptoms)	
E. Arousal & reactivity (at least 2 symptoms)	• Persistent perception of heightened current threat
F. Duration more than 1 month	• Must last for at least several weeks
G. Clinically significant distress or impairment of function	• Significant impairment in personal, family, social, educational, occupational, or other important areas of functioning
H. Caused by event and not by physiological effects of a substance or medical condition	

Intrusions are recurrent, involuntary, and intrusive distressing memories of the traumatic event or recurrent distressing dreams in which the content and/or effect of the dream are related to the traumatic event or dissociative reactions (eg, flashbacks) in which the individual feels or acts as if the traumatic event were recurring or intense or prolonged psychological distress at exposure to internal or external cues that symbolize or resemble an aspect of the traumatic event or marked physiological reactions to internal or external cues that symbolize or resemble an aspect of the traumatic event. Avoidance or efforts to avoid distressing memories, thoughts, or feelings about or closely associated with the traumatic event or external reminders that arouse distressing memories, thoughts, or feelings about or closely associated with the traumatic event. Inability to remember an important aspect of the traumatic event or persistent and exaggerated negative beliefs or expectations about oneself, others, or the world or persistent, distorted cognitions about the cause or consequences of the traumatic event that lead the individual to blame himself or herself or others or persistent negative emotional state or markedly diminished interest or participation in significant activities or feelings of detachment or estrangement from others or persistent inability to experience positive emotions. Irritable behavior and angry outbursts or reckless or self-destructive behavior or hypervigilance or exaggerated startle response or problems with concentration or sleep disturbance.

DSM-5, Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition; *ICD-11*, International Classification of Diseases, 11th Revision.

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inconsistent, but some studies suggest an association with poor child development,[27] child sleep problems,[28] and possible complications in the mother-infant relationship for some women.[29] More recently, research on other traumas suggests that there might be a possible intergenerational transmission of vulnerability and trauma, which may affect the offspring through different pathways.[30] For example, in pregnancy, intense stress or trauma may lead to epigenetic changes in response to stress exposure that can be transmitted to the infant.[31] However, most of the evidence so far is based on single studies that use different measures; therefore, larger studies with prospective designs and validated measures are needed before firm conclusions can be drawn.

Perinatal mental health problems, such as childbirth-related PTSD, also impose high economic costs. The cost of common perinatal mental health problems is estimated to be £8.1 billion in the United Kingdom[32] and $14 billion in the United States[33] for each 1-year birth cohort, with a substantial proportion of these costs associated with the impact on the child. The costs of psychological birth trauma have yet to be established. However, despite these potential costs, a study of 18 European countries found significant gaps in formalized care for psychological birth trauma.[34]

Risk factors

The main risk factors and causes of childbirth-related PTSD were summarized in a diathesis-stress model of psychological birth trauma (Figure 2). Diathesis-stress models are used in health sciences to summarize how an individual's preexisting vulnerabilities (diathesis) interact with stressful events to determine health outcomes. The diathesis-stress model of childbirth-related PTSD was developed from a meta-analysis of risk factors from 50 studies across 15 countries.[21] This model summarizes possible interactions between the main risk factors for childbirth-related PTSD. During pregnancy, risk factors most strongly associated with PTSD were depression (r=0.51), fear of childbirth (r=0.41), poor health or complications of pregnancy (r=0.38), history of trauma (r=0.39), or previous psychological therapy for pregnancy or birth-related problems (r=0.32). During birth, risk factors most strongly associated with PTSD were negative subjective birth experiences (r=0.59), operative birth (assisted vaginal delivery or cesarean delivery [r=0.48]), and dissociation (r=0.32) (including depersonalization, derealization, and emotional numbness[36]). Support during birth was a protective factor (r =−0.38). Although not included in this model, obstetrical or neonatal complications (eg, maternal morbidity, infant admission to the neonatal intensive care unit) were associated with PTSD but not as strongly as the risk and protective factors shown. The main postpartum risk factors were concurrent depression (r=0.60), additional stress, and poor coping (r=0.30).[15,21,22]

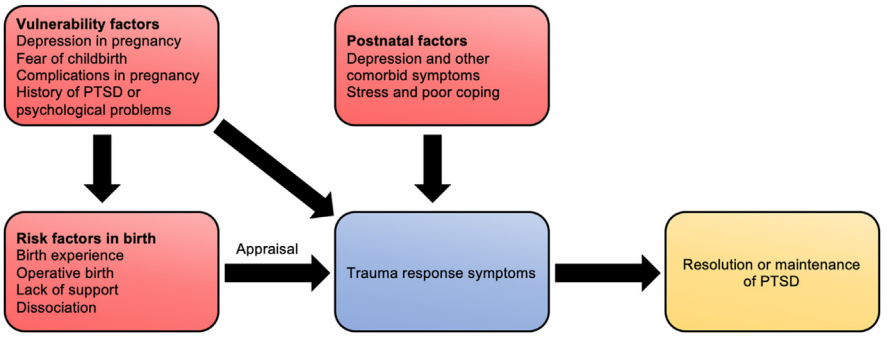
In contrast with other perinatal mental health disorders, there is an opportunity to prevent childbirth-related PTSD by preventing traumatic childbirths in the first place. As shown, a key factor in improving birth outcomes and buffering against childbirth-related PTSD is good support from staff during labor and birth.[23] Conversely, poor support is associated with poorer birth outcomes and a greater risk for childbirth-related PTSD, as is mistreatment during childbirth.[24]

> "If I complained about pain, they abused me in such vulgar language - When you slept with husband, you enjoyed - now why are you screaming, just lie down." Indian mother[17]

Pathophysiology

Following traumatic events, individuals with PTSD report increased stress perception and feeling chronically stressed.[37] The physiological stress response system is composed of the sympathetic and the parasympathetic branches of the autonomous nervous system and the hypothalamic-pituitary-adrenal (HPA) axis. Under stress conditions, HPA activation increases (leading to elevated cortisol release), whereas activation of the parasympathetic nervous system decreases (leading to reduced high-frequency power heart rate, ie, 0.15−0.40 Hz) and activation of the sympathetic nervous system intensifies (leading to increased low-frequency power heart rate, ie, 0.06−0.10 Hz). This leads to a short-term imbalance of the autonomic nervous system, which is measured by calculating the low frequency to high frequency ratio.[38] PTSD is also related to changes in the physiological stress

FIGURE 2
Diathesis-stress model of childbirth-related PTSD[35]



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PTSD, posttraumatic stress disorder.

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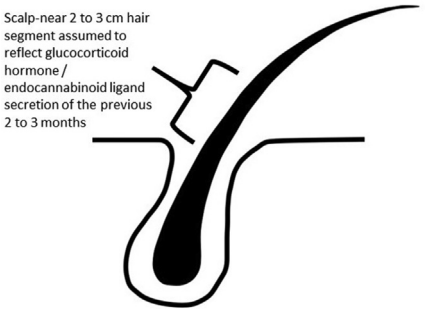
response systems,[39,40] such as increased heart rate and reduced parasympathetic activity when compared with controls[41] and dysregulated activation of the HPA axis.[42] The HPA axis plays a key role in controlling the body's stress response, and its dysregulation can lead to abnormalities in the release of stress hormones, such as cortisol, that may contribute to exaggerated stress responses and emotional disturbances. A meta-analysis showed that patients with PTSD also had altered autonomic nervous system responses at rest when compared with controls (ie, reduced high-frequency and low-frequency power with a higher reduction in high-frequency power than in low-frequency power and an increased high frequency to low frequency ratio), indicating a lack of adaptive capacity of the cardiovascular system.[39] Magnetic resonance imaging (MRI) studies (both structural and functional MRI) also suggest that PTSD leads to gray matter atrophy, altered white matter integrity, and focal neural activity alterations and impaired functional connectivity, which lead to alterations in the brain systems responsible for fear learning and responses to threat (ie, the anterior cingulate, amygdala, hippocampus, and insula).[43] Functional MRI studies demonstrate altered spontaneous neural activity in patients with PTSD when compared with combined trauma-exposed and non−trauma-exposed controls, including lower activity in the cerebellum (pyramis), globus pallidus, posterior insula, and middle frontal gyrus and higher activity in the parahippocampal gurus or amygdala and ventral anterior cingulate cortex.[43] Such pathophysiological changes also lead to a limited capacity to adapt to additional stressful circumstances.

There are currently no data on whether childbirth-related PTSD is associated with similar changes. The few studies on the pathophysiology of childbirth-related PTSD provide some support for dysregulations in the stress response system that occur in mothers following a psychologically traumatic childbirth. For example, a study found that women who had a traumatic birth reported higher perceived stress levels in response to an infant stress paradigm than controls.[44] Women who had a traumatic birth had a higher high-frequency power and a lower low frequency to high frequency ratio when controlling for the role of the perceived life threat to the infant with moderate to large effect sizes. Likewise, another study of women with childbirth-related PTSD showed elevated psychophysiological reactivity (as quantified by skin conductance, heart rate, and left lateral frontalis and corrugator electromyogram responses) during scripted mental imagery of their childbirth experience. These elevated physiological responses were similar to those seen among people with PTSD caused by other types of trauma.[45] Furthermore, 2 studies found that following a negative subjective birth experience, individuals who had lower hair concentrations of the glucocorticoids cortisol (B, 2.74; standard error [SE], 1.09; 95% confidence interval [CI], 0.58−4.90) and cortisone (B, 1.86; SE, 0.87; 95% CI, 0.15−3.57) and the endocannabinoid anandamide (B, 1.01; SE, 0.50; 95% CI, 0.08−2.06) during the third trimester of pregnancy, reported higher symptom levels of childbirth-related PTSD.[46,47] Figure 3 depicts a schematic representation of a hair follicle showing the near-scalp 2 to 3 cm hair segment that is typically used for hair analysis to quantify levels of glucocorticoid hormones and endocannabinoid ligands. With an average hair growth rate of 1 cm per month, these are assumed to reflect secretion over the previous 2 to 3 months.[48−50]

However, research on the pathophysiology of childbirth-related PTSD is limited with inconsistent results. Physiological changes that accompany pregnancy and birth, including hormonal changes, also influence autonomic nervous system and HPA activity, adding further complexity.[51] For example, oxytocin is involved in physiological processes during birth and breastfeeding and has been implicated in maternal behaviors, maternal affective processes (eg, bonding), and stress responses.[52] Oxytocin and oxytocin receptors increase during pregnancy and birth, and

FIGURE 3
Quantification of hair glucocorticoid hormone and endocannabinoid ligand levels



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oxytocin levels are 3 to 4 times higher at birth than at the beginning of labor.[53] Animal and human studies show that the oxytocinergic system can buffer against stress responses and is associated with affiliative behaviors, such as positive maternal caregiving and bonding behaviors, particularly among those exposed to stress.[45] This has led to the tend-befriend theory of stress responses in females who are thought to be more likely to turn to others for support and protection in response to stress, which is partly mediated by the oxytocinergic system.[54]

Dysregulations in the stress response system are likely to not only affect mothers but also to provoke changes in the stress response systems in their infants. Although there is evidence for the intergenerational transmission of stress- and trauma-related changes in utero,[55] there is very little research on whether and through which mechanisms (eg, epigenetics) maternal childbirth-related PTSD is related to dysregulations in infants' stress response functioning.[56] Initial evidence, from human and animal research, suggests that exposure to stressors in early life may be associated with alterations in the epigenetic signatures of genes involved in stress responsivity, thereby leading to dysfunctions in the HPA axis.[57] Maternal psychological disorders may negatively affect mother-child interactional behavior critical for

the healthy development of children,[58] and this has also been indicated for childbirth-related PTSD.[59] Thus, it could be that altered mother-infant interactions owing to the mother's childbirth-related PTSD represent a form of early-life stress exposure that may shape the epigenetic signatures and thereby the activity of genes within the developing organism,[58] yet, longitudinal research exploring the mechanisms specific to childbirth-related PTSD is clearly warranted. The literature on infant development suggests that synchronization of the mother's and infant's physiological stress systems can occur to help the infants develop emotion regulation capacity.[60] This is also influenced by maternal sensitivity to the infant's cues.[61] However, no research has looked at this in the context of childbirth-related PTSD thus far and results from other high-risk maternal populations are inconclusive.[62]

There are also nonphysiological mechanisms through which psychological birth trauma and childbirth-related PTSD may impact the infant, including poor maternal emotion regulation, negative parenting styles, difficulties establishing a secure attachment relationship with the infant, and greater exposure to trauma environments, such as adverse childhood events.[63] Indeed, mothers with childbirth-related PTSD have been observed to have lower maternal sensitivity,[59] less adequate interaction distance with the child,[64] and more self-reported difficulties bonding with their infant.[65] No studies thus far have investigated how early changes in parenting and the parent-infant relationship after traumatic childbirth may impact infant physiology.

Diagnosis and screening

Traumatic birth experiences and childbirth-related PTSD remain largely unrecognized in maternity services and are not routinely screened for during pregnancy and the postpartum period.[66] Those affected are therefore not routinely identified or treated for childbirth-related PTSD.[67] A psychiatric diagnosis of childbirth-related PTSD is made using the diagnostic criteria shown in the Table,[13,68] with childbirth as the index trauma. Symptoms of PTSD have to be experienced for at least 1 month to distinguish it from acute stress responses, such as acute stress disorder. The 1-month timeframe also allows for nontreatment related remission, which occurs in approximately 44% of those with PTSD symptoms.[69] The reliability of psychiatric diagnoses has always been a challenge,[70] and diagnostic criteria like those in the Table help to increase reliability. However, the diagnostic criteria for PTSD have changed historically and there are still differences between the PTSD criteria specified in the DSM-5 of the American Psychiatric Association and those of the International Classification of Diseases, 11th Revision, of the World Health Organization. Despite this, there seems to be reasonable cross-cultural replicability in PTSD.[71,72]

Barriers to identification include a lack of awareness of childbirth-related PTSD among women and health professionals,[73,74] a lack of consensus on the best way to screen for childbirth-related PTSD, and a lack of clinical guidelines for the assessment and treatment of childbirth-related PTSD. Screening for mental health problems in pregnancy and after birth is acceptable to women[75] and part of routine maternity care in many countries. However, no research has evaluated screening programs for childbirth-related PTSD and whether it leads to improved outcomes for women and infants.

> "She was the first person who made me feel like it was okay to not be okay, that the way I was feeling was not how it was going to be for the rest of my life… that one nurse just asking that simple question and following up on it changed everything." United Kingdom mother[15].

A critical question for screening and assessment is how to do it effectively. Until recently, identifying and assessing childbirth-related PTSD was confounded by a lack of validated screening tools. Thus, questionnaires developed for use with other groups were typically used, such as those used for military veterans (eg, Impact of Event Scale[76]; Posttraumatic Checklist for DSM-5[77]; PTSD Symptom Self-Report Scale[78]). The most commonly used clinician-rated interview measure is the Clinician-Administered PTSD Scale for DSM-5.[79] Measures developed specifically for assessing childbirth-related PTSD are the Traumatic Events Scale,[80] Perinatal PTSD Questionnaire,[81] and City Birth Trauma Scale.[82] However, there is little information available on the diagnostic accuracy of these measurement tools for childbirth-related PTSD. Other screening tools, such as the Antenatal Risk Questionnaire, take a broader approach and assess a range of psychosocial risk factors (eg, child abuse, preexisting mental health issues, sexual or intimate partner violence, substance misuse) instead of trauma symptoms.[83] Furthermore, a recent study provided proof of concept that postnatal women's narratives, analyzed using a machine learning model, could identify women who are likely to have childbirth-related PTSD with relatively high accuracy. The women with childbirth-related PTSD gave longer narratives and used more negative emotional expressions and death-related words when describing their childbirth experience than women without childbirth-related PTSD, which could be an identifier for clinicians when interacting with postnatal women.[84]

Other factors to consider include who to screen (ie, whether screening should be universal or include only those in high-risk groups, such as those with maternal or neonatal complications or a history of trauma); when to screen; and whether screening should be conducted in a 1- or 2-stage process. A 1-stage process involves screening once for psychological birth trauma and PTSD, whereas a 2-stage process might use a broad screening tool as a first step to identify women with any form of psychological distress and then follow-up with a more specific screening tool to determine the type of distress or disorder present. Diagnostic criteria specify that PTSD symptoms should be experienced for at least 1 month, suggesting that assessment for PTSD should be done 1 or more months after birth. However, early assessment of traumatic childbirth

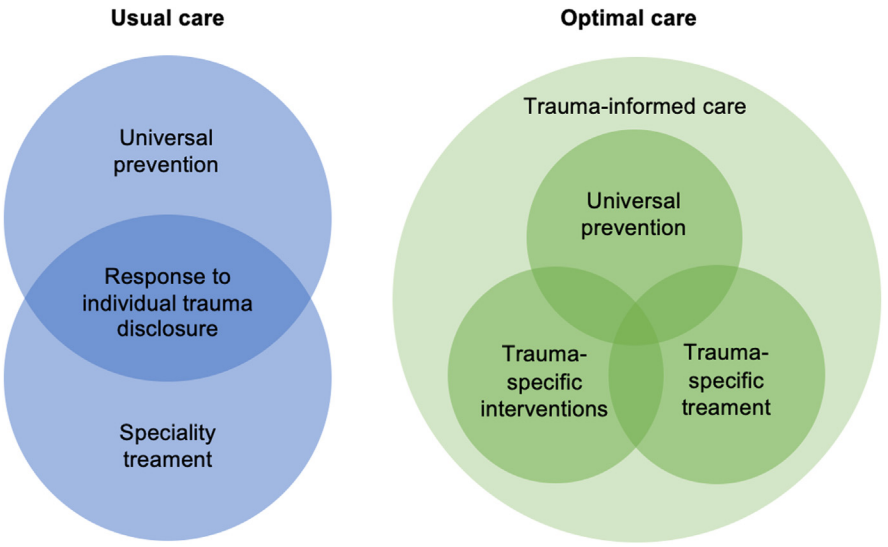
experiences is desirable to identify individuals at high risk and offer interventions to prevent the development of childbirth-related PTSD. A 2-stage approach may therefore be appropriate during which women and people at high risk for childbirth-related PTSD are identified shortly after birth, potentially offered preventative intervention at this stage, and followed up to 1 or more months after birth to assess childbirth-related PTSD and offered treatment when needed.

Prevention and treatment

Interventions to prevent or treat childbirth-related PTSD can be implemented at several time points, namely during pregnancy, peripartum, or postpartum. Primary prevention aims to prevent a traumatic childbirth experience and childbirth-related PTSD from occurring in the first place by removing or reducing risk factors for childbirth-related PTSD. Approaches might include screening for antenatal risk factors for childbirth-related PTSD (eg, pregnancy complications, fear of childbirth) and/or altering care during birth to ameliorate or prevent childbirth-related PTSD from occurring.

The concept of trauma-informed care is receiving attention across a range of healthcare settings as a way to avoid exacerbating or triggering trauma.[85] Trauma-informed care has been defined as based on the following 4 key principles (the 4 Rs): (1) realization of the widespread nature of trauma; (2) recognition of unresolved trauma; (3) response by incorporating knowledge into practice; and (4) resistance of re-traumatisation.[86] Pregnancy and birth can be a time during which previous trauma is triggered, and women or birth givers and partners re-experience intrusions of that trauma. Therefore, clinicians need to recognize individuals at increased risk and implement care plans to minimize re-traumatization and/or prevent new trauma from occurring. Figure 4 gives an example of a trauma-informed approach to care with a specific focus on preventing birth-related trauma and a recognition of previous trauma with specific trauma-focused interventions.

FIGURE 4
Trauma-informed care



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The international consensus definition of a traumatic childbirth experience cited above[12] focuses on the importance of the woman's subjective experience as central and points out that a traumatic childbirth experience also involves interactions with caregivers and events and is directly related to childbirth, causing overwhelming and stressful emotions and reactions that can have short- or long-term impacts on health and well-being. Therefore, it should be acknowledged that the context in which maternity care is delivered can contribute to negative psychological outcomes. Trauma-informed care is an emerging approach to care, and the Substance Abuse and Mental Health Services Administration[88] has outlined a set of 4 assumptions known as the 4 Rs. A trauma-informed approach to care means that all staff in an organization have a realization of the widespread nature and effects of trauma, and its impact on individuals or families and organizations. The traumatic event(s) may have occurred in the past (ie, adverse childhood events or sexual abuse, domestic violence, etc), or the event may be current. It is also important to note that secondary traumatic stress may be experienced by health professionals related to hearing an individual's story or by witnessing or participating in a traumatic event.[89] The second R is aimed at supporting staff to recognize the signs of trauma, such as agitation, irritability, anxiety or depression, anger, easily startled by noise, sweating or palpitations, flashbacks, re-experiencing the trauma, difficulty trusting or concentrating, numbness, self-blame, guilt, or shame. As previously mentioned, a history of childhood mistreatment and sexual abuse is an important specific trauma history in maternity care because intimate contact with women (for example, during a vaginal examination) can trigger symptoms.[90] However, it should be noted that for some women it is the birth experience itself that constitutes the traumatic event. It is essential that the organization at a wider level responds (third R) by integrating knowledge about trauma into its structures, policies, and practices to support patients and families and staff. Finally, through the integration of a trauma-informed approach into the care provided, the organization aims to resist re-traumatization of individuals (and groups) through supporting staff by

recognizing the organizational practices that may trigger painful memories for those with a trauma history. If a trauma-informed approach to care is to be adopted by clinicians, it requires organizational support. Although trauma-informed approaches are intuitively appealing, there is little research focused on evaluating if these approaches actually reduce childbirth-related PTSD.[91] The American College of Obstetricians and Gynecologists has recognized that it is critical that obstetrician-gynecologists recognize the impact of trauma on health outcomes and that clinicians should seek to implement strategies to prevent re-traumatization.[92] However, to date, a single approach to how trauma-informed care should be implemented and evaluated has yet to emerge.[92,93]

As mentioned in the section on risk factors, a key area for intervention is support during birth. It is well-established that continuous support during labor is important in positive birth outcomes, such as fewer operative births and greater birth satisfaction.[94] Support is also associated with reduced childbirth-related PTSD symptoms[35] and may be particularly important for those who experienced complications during birth, those with a history of trauma, and/or those with high levels of intervention.[95] Support during labor and birth is therefore critical in terms of reducing risk, preventing psychological birth trauma, and increasing resilience. Clinicians can therefore use an approach consistent with the principles of trauma-informed care by recognizing women who are at risk and responding in a supportive manner that minimizes potential trauma or that avoids re-traumatization.

> "It felt like rape. I panicked. I was conscious enough to tell the midwife I was having rape flashbacks, but she could not really offer any help. In fact I had freaked her out." US mother[81]

Secondary prevention approaches aim to identify those who had a traumatic childbirth experience and to intervene early to prevent the development of childbirth-related PTSD. Such approaches attempt to interfere with trauma memory processes (eg, trauma memory consolidation) or with physiological stress responses to trauma (eg, skin-to-skin contact with the infant to promote oxytocin release) or to promote emotional processing of the trauma and reappraisal (eg, writing about the traumatic birth). Interventions include expressive writing interventions, midwifery-led debriefing, trauma-focused cognitive behavior therapy (CBT), eye movement desensitization and reprocessing, and single-session behavioral interventions using Tetris gameplay to interfere with memory consolidation processes.[96]

Reviews and meta-analyses of approaches to secondary prevention draw mixed conclusions. Some found that trauma-focused psychological therapies, such as exposure therapy, trauma-focused CBT, and eye movement desensitization and reprocessing, led to a moderate reduction in childbirth-related PTSD symptoms in the short term (up to 3 months postpartum) when compared with usual care.[97] Others identified that expressive writing, psychoeducation, and early psychological interventions delivered within 12 weeks after a traumatic birth were potentially helpful.[98] Evidence on the effectiveness of trauma-focused debriefing is controversial, and these types of interventions are not recommended following childbirth.[99]

Tertiary prevention or treatment aims to ensure that people with childbirth-related PTSD are identified and treated to recovery so that childbirth-related PTSD does not become chronic. These approaches are informed by evidence on the treatment of PTSD following other traumas, which found that trauma-focused psychotherapy, including CBT and eye movement desensitization and reprocessing, were effective.[100] A recent review of treatment guidelines for general PTSD concluded that one-third of guidelines recommended psychotherapy instead of pharmacotherapy as first-line treatment.[101] All guidelines highlight CBT as the first-line psychological treatment for PTSD, which includes several specific therapies, such as cognitive processing therapy, prolonged exposure therapy, and image rehearsal therapy. Pharmacotherapy may be considered when PTSD symptoms are severe and psychotherapy does not provide sufficient results or when they are associated with other comorbid mental disorders, such as depression or sleep disorders. Antidepressants, such as selective serotonin reuptake inhibitors or serotonin-norepinephrine reuptake inhibitors, may alleviate symptoms of anxiety, depression, and intrusive thoughts associated with PTSD.[102−104] In addition, prazosin, an alpha-1 adrenergic receptor antagonist, may be used to treat individuals with PTSD who suffer from nightmares and sleep disturbances.[105]

For treatment of childbirth-related PTSD, a meta-analysis of trauma-focused psychological therapies found a moderate effect when compared with usual care.[97] A more recent systematic review concluded that trauma-focused CBT and eye movement desensitization and reprocessing may be effective but that more evidence is needed, especially from randomized controlled trials.[106] In particular, more studies that differentiate between low- and high-risk groups, low- and high-resource settings, and that use longer term follow-up periods are needed to determine which approach is most effective and acceptable for treating childbirth-related PTSD. Whether combining trauma-focused psychotherapy with pharmacologic treatment is also effective in childbirth-related PTSD remains to be explored.

Implications for practice and policy

It has always been the case that many aspects of clinical care currently deemed as standard are not underpinned by robust evidence of effectiveness or positive impacts on clinical outcomes. As outlined above, there is little evidence on how to best assess, prevent, and treat childbirth-related PTSD, but this does not remove the need and responsibility to take pragmatic steps while evidence for a particular treatment is generated.

In the meantime, we can draw from the evidence on the assessment and treatment of PTSD following other traumas to provide specifically tailored interventions, building on existing evidence-based treatments for PTSD while incorporating therapeutic elements relevant to this period, such as parent-child bonding, hypervigilance to physical cues, shattered childbirth expectations, etc.

Earlier in this review, major risk factors for the development of childbirth-related PTSD were outlined, such as complications in pregnancy, operative birth, lack of support in birth, and additional stress and poor coping after birth. Some of these risk factors can be easily addressed by incorporating institutional strategies to promote continuity of care and by allocating resources for maternity staff training and education in trauma-informed care. Models of clinical care can be adapted to minimize negative interactions with caregivers that increase the risk of childbirth-related PTSD. This can be done by taking a trauma-informed approach to care and/or by identifying individuals at high risk for childbirth-related PTSD,[85] as outlined in Figure 4. Recognition of past traumas, continuity of care, good support and communication during pregnancy, continuous one-to-one support during labor, and asking about people's birth experiences are changes that require little resources and that can be incorporated into practice immediately. These are not new concepts but perhaps need to be emphasized in the context of preventing and reducing psychological birth trauma and childbirth-related PTSD. Thus, changing the way we provide care to a more trauma-informed approach can begin while evidence is being generated on the optimum methods for prevention and treatment for childbirth-related PTSD within different models of maternity care.

Psychological birth trauma and childbirth-related PTSD require the same recognition and focus given to postnatal depression, and effective approaches for the assessment and prevention of psychological birth trauma and childbirth-related PTSD are required.[63] National and international professional guidelines need to be developed to increase awareness of childbirth-related PTSD and to highlight evidence-based strategies for assessment, prevention, and treatment.[107] The current lack of national and international policy guidance on the prevention, care, and treatment of psychological birth trauma and the absence of formal psychological birth trauma services and training[34] show the need to engage with service managers and policy makers. Healthcare policies to guide the development of perinatal mental health services should also include awareness of childbirth-related PTSD and recommendations for assessment, prevention, and treatment as previously outlined. There are very few evidence-based guidelines for the assessment, prevention, and treatment of childbirth-related PTSD with a few notable exceptions.[108,109] Management of childbirth-related PTSD is therefore usually based on guidelines pertaining to general PTSD in adults, such as the National Institute of Health and Care Excellence guidelines.[110] According to these, general principles of care include peer support, maintaining safe environments, and involving and supporting the family and carers. In addition to the clinical aspects of care, service improvement must be seen within the larger political dimension.

In summary, the evidence to date emphasizes that a significant percentage of parents suffer from traumatic childbirth experiences and childbirth-related PTSD worldwide. Adequate prevention, screening, and intervention could alleviate a considerable amount of suffering in affected families.[109] Against the background of available research on the impact of childbirth-related PTSD on families, it is important to design and evaluate assessment, prevention, and treatment strategies targeting the woman or birthing person, couple dyad, parent-infant dyad, and family as a whole. Further research should focus on the inclusion of couples in different constellations and, more generally, on the inclusion of more diverse populations in diverse settings. The paucity of national and international policy guidance on the prevention, care, and treatment of psychological birth trauma and the absence of formal psychological birth trauma services and training show the need to engage with service managers and policy makers. ■

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