

Psychological Outcomes and Measurement of Maternal Posttraumatic Stress Disorder During the Perinatal Period

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For many parents, labor, delivery, and/or the perinatal and neonatal periods present significant stressors that result in clinically significant parental feelings of psychological distress or trauma. This review article identifies known preexisting risk, and protective, factors for such distress, focusing on individual variables and familial or other social support networks. Research describing the full range of possible psychological reactions is also presented, loosely categorized as representing psychological outcomes of resiliency or growth, externalized distress, and internalized distress. These outcomes are viewed as neither linear nor mutually exclusive, and specific implications for each outcome are presented. The primary focus of this review is on the most well understood internalizing distress outcome during the perinatal period, maternal posttraumatic stress reactions. The utility of a brief, freely available measure quantifying such distress is also overviewed, including standards for its usage. Healthcare and particularly nursing staff are encouraged to attend to the range of possible psychological outcomes that may emerge during the perinatal period, identifying distressed mothers, so that they may be referred for care. The review concludes by presenting recommended future directions for research regarding the measurement of posttraumatic stress disorder in parents. **Key words:** *measure, measurement, mothers, NICU, posttraumatic, trauma*

The birth of a child is colloquially conceptualized as a time of great joy and celebration. For many parents, however, labor and delivery occur unexpectedly and prematurely resulting in significant feelings of distress from a range of stressors (eg, complicated delivery, unstable medical status of mother or child, etc).

The vast majority of adults are exposed to traumatic stressors in their lifetime,¹⁻⁴ and although the stressors associated with premature births are unique in some ways, they may share a number of common factors with other traumatic events. As a result, there is a wealth of available literature that can help perinatal and neonatal nurses understand the preexisting risk factors that may result in a parent being more vulnerable, or more resilient, to the stressors associated with birth and perinatal events. This article will first summarize known preexisting risk factors, while highlighting factors that may be protective, and then present the roles of familial and social support. An overview of the range of possible mental health outcomes is provided and the most well understood of these outcomes, posttraumatic stress reactions, discussed.

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Unfortunately, such postnatal maternal distress has been linked to poorer child developmental outcomes^{5,6} and disruptions in family functioning.⁷ Such outcomes emphasize the importance of assessing for maternal distress. Therefore, a freely available measure is described that can identify mothers experiencing such reactions so that mental health services can be initiated and distress alleviated.

PREEXISTING RISK FACTORS

Individual variables

Individual factors that are known to be linked to outcomes following exposure to a potentially traumatic stressor predominantly span 2 broad groupings: prior traumatization and personality variables. Research on the impact of prior traumatization has revealed inconsistent findings. Meta-analytic studies examining the role of prior traumatization in influencing reactions to later traumas demonstrate a modest impact on the likelihood of subsequently developing post-traumatic stress disorder (PTSD) following additional trauma exposure.^{8,9} However, such findings average the effect of all previous trauma exposure, and a review of the individual studies reveals that certain traumatic stressors may be consistently more predictive of outcomes for certain populations. For example, Green and colleagues¹⁰ found that multiple traumatic exposures may adversely impact outcome by reducing coping ability, particularly among those exposed to multiple interpersonal traumas. Alternatively, the additive effect of exposure may be most strong when the stressor events occur in a relatively short period of time.¹¹ Thus, in neonatal settings, staff should record accurate patient history to include exposure to traumatic events, paying special attention to whether they are interpersonal in nature, and consider that parents who have had repeated significant stressors within a relatively brief period of time may evidence less effective coping responses and be at greater risk for unremitting distress that merits clinical attention.

As stated previously, personality is also a commonly researched area of individual risk factors associated with a range of outcomes following trauma exposure. For example, those with confirmed or suspected diagnosis of certain personality disorders appear to be more at risk for PTSD following trauma exposure. In particular, borderline or antisocial personality traits have been found to strongly predict PTSD symptoms,¹² and narcissism has also been widely implicated.^{2,13-17}

Aside from personality disorders, certain normal range personality traits also appear to be related to

distress following traumatic exposure. Strong negative and sustained emotionality, sometimes referred to as neuroticism, has been found to be a primary risk factor for the development of PTSD symptoms.¹⁸⁻²⁰ Most notably, in a prospective study with pregnant women, pretrauma neuroticism predicted PTSD symptoms (particularly increased arousal) among women who experienced pregnancy loss.²¹ Interestingly, some have reported that the effect of neuroticism may not be fully evident until at least 2 months following trauma exposure, which may complicate the exploration of this personality feature in association with acute outcomes following trauma exposure.^{16,22} In other words, the full effect of neuroticism on mental health outcomes may be more evident at postpartum checkups than in the initial days following childbirth.

Other personality traits of agreeableness and conscientiousness also appear to be associated with PTSD symptoms following trauma exposure. Specifically, low levels of conscientiousness have been linked to negative posttrauma mental health¹⁴ and low agreeableness has been found to be correlated with increased adverse symptoms following trauma.^{14,17,23} In contrast, high levels of conscientiousness and agreeableness appear to promote resilience.^{19,24} Finally, positive emotionality, which may conceptually largely overlap with extraversion, also appears to moderate and lessen the expression of PTSD symptoms.¹⁹

In terms of the nursing implications, the research indicates that nursing staff should expect parents to be at higher risk for significant distress if they have a known "Cluster B" personality disorder, demonstrate low agreeableness or conscientiousness, or evidence sustained, negative emotionality. If the parent is seen only for a very brief period of time, it makes it hard to determine whether the negative emotionality observed is truly sustained or transient. As such, attending to negative emotionality at postpartum checkups is encouraged. Furthermore, nursing staff is encouraged to support and reinforce positive emotionality, agreeableness, and conscientious behaviors by complimenting such behaviors when they are observed; this may be particularly important when a parent is rarely showing such qualities.

Familial and social support

When exposed to stress, individuals commonly access their family or social networks.²⁵⁻²⁷ Although some research indicates no relationship between support and adjustment following trauma,²⁸⁻³⁰ other recent studies report that the simple presence or absence of a support network is predictive of emotional reactions such as depression and anxiety.³¹ In fact, in a recent

meta-analysis of the existing literature, lack of social support was found to be a stronger predictor of PTSD than demographic characteristics or prior traumas.⁹

Unfortunately, family and friends may not uniformly act in ways that are experienced as helpful to those who are exposed to trauma. Several studies have found that inadequate spousal support, especially when unexpected, is associated with increased adverse psychological symptoms.^{30,32,33} Other studies have noted that those trauma-exposed individuals with unsupportive social networks tend to report greater psychological symptoms³⁴⁻³⁶ and higher rates of PTSD specifically.^{8,9}

However, research also indicates that the social network may be modifiable³⁷ with the ability to promote resiliency following traumatic exposure by enhancing subjective feelings of resiliency,³⁸ lessening somatic symptoms, improving subjective health ratings,³⁹ and decreasing general distress.⁴⁰ A key element in interventions directed at trauma-exposed populations, regardless of type, appears to be the enhancement of the individual's relationships with their broader community.⁴¹

Nursing staff are encouraged to strengthen the quality of the support network as an aide to parental resiliency. Such efforts can result in enhanced subjective feelings of resiliency, a lessening of somatic symptoms, improved subjective health ratings, and decreased general distress. Connecting parents with others who have gone through similar experiences is a key role that hospitals can play by forming support groups. In more rural areas where this may be challenging, helping parents become aware of online communities that are composed of similar others may be helpful. In addition, fostering supportive spousal relationships is important. Making sure that parents have resources to privately interact with one another and be emotionally vulnerable with one another is important. Furthermore, nursing staff must be mindful to attend to the needs of both parents, educating them when appropriate, and referring one or both to formal support systems if needed or requested (eg, pastoral care, therapy, etc).

PSYCHOLOGICAL OUTCOMES OF TRAUMA

After the experience of a traumatic event, a range of potentially enduring outcomes is possible, perhaps encompassing a host of psychological, somatic, or behavioral changes (for review, see Crome and McCabe⁴²). For ease of presentation, these outcomes will be clustered into 3 groups: resiliency/growth, externalizing distress reactions, and internalizing distress reactions (including PTSD). However, it is important to recog-

nize that these conceptual outcomes are neither mutually exclusive nor linear. They may coexist or vary over time following traumatic exposure.^{43,44}

Resiliency and/or growth

Despite the likely emergence of physical and psychological symptoms in the immediate aftermath of a traumatic event, 94% within the first 2 weeks,⁴⁵ only a few individuals (3%-12%) will continue to experience symptoms in the months and years to follow.⁴⁵⁻⁴⁹ Some researchers have, therefore, proposed that the normal or typical outcome following trauma exposure is resiliency, rather than distress.⁵⁰ Furthermore, known possible positive changes include improved relationships, new possibilities for one's life, a greater appreciation for life, a greater sense of personal strength, or spiritual development, and are experienced by more than half of trauma-exposed individuals.^{51,52} To clarify, growth, such as higher levels of functioning or appreciation for life, is not viewed as a positive outcome of the trauma itself⁵³ but rather as changes that may occur through experiencing, understanding, and accepting emotions and experiences after exposure to a stressor.

Rasmussen⁵⁴ argues that resiliency or growth cannot, by definition, coexist with distress, but other researchers have found that these constructs may coexist.^{43,44} Furthermore, even in the immediacy following trauma exposure, such positive outcomes can occur⁵⁵ and be maintained over time.⁵⁶ Thus, while attempting to alleviate distress, providers should also be attentive and foster resiliency and growth. As mentioned previously, social support may be the most effective method for enhancing these positive outcomes.^{57,58}

Aside from attending to the support network for parents, nursing staff are also encouraged to expect that nearly all parents will evidence some signs of distress and to be mindful of instilling hope at such times. Hope appears to be a key variable in thwarting the experience of persisting clinically significant distress.

Externalizing distress

Another possible outcome is to externalize distress, potentially abusing or exploiting others.⁵⁹ Typically, such outcomes are described as provoked by feelings of revenge⁶⁰⁻⁶² or desperation.⁶³⁻⁶⁵ Externalizing responses appear to be more likely among those previously traumatized during childhood from abuse,⁶⁶⁻⁷³ but it is clear that the majority of such individuals do not go on to abuse or exploit others.⁷⁴⁻⁷⁷ Although these negative outcomes are concerning, it is important to remember that they are not the primary

outcome for most survivors of trauma. Patients who evidence aggression in the neonatal unit should be closely monitored to ensure the safety of the family, however.

Internalizing distress

Some who are exposed to a trauma assume responsibility for the occurrence and experience self-blame.^{78–80} Unable to deal with the tumultuous experience of traumatic exposure, they evidence internalizing physical and psychological symptoms, over both the short term^{48,81,82} and long term.^{83–86} Those who experience traumatic events report poorer subjective health⁸⁷ and more chronic medical conditions⁸⁸ which appear to be exacerbated by internalized emotional distress.⁸⁹ Such emotional distress often includes symptoms of depression^{90,91} and anxiety,⁹² but may also include binge eating,^{93,94} anorexia nervosa,⁹⁵ or other eating disorders.⁹⁶ Such posttraumatic symptoms commonly appears acutely in the immediate aftermath of trauma but often fades with time.^{45,97} Unfortunately, it can last for months or even years to come.^{98,99}

Posttraumatic stress disorder

The most commonly studied psychological difficulty following trauma is PTSD,⁴⁹ an anxiety disorder that follows exposure to a trauma in which fear, helplessness, or horror was experienced. Following exposure to trauma, the person faces persistent unwanted recollections, avoidance, and/or increased arousal for at least a month following the trauma resulting in clinically significant distress or impairment.¹⁰⁰ Symptoms that are common to this disorder include feelings of emotional numbness⁴⁸ or attempting to avoid thinking about the traumatic experience.⁵⁸ At any given time, an estimated 4% to 8% of the general population meets criteria for diagnosis of PTSD.^{101,102} Women, in particular, are more likely to experience PTSD in combination with other internalizing mental health problems such as depression and other anxiety disorders.¹⁰² In addition, PTSD is highly comorbid with substance abuse,^{103,104} with rates that double the prevalence rate found in the general population.^{2,102,105} Unfortunately, mental health outcomes are worse when substance abuse and PTSD co-occur than when either disorder exists alone.^{106–112}

Perinatal PTSD

Throughout the 1990s, a small body of case studies began appearing in the literature documenting PTSD symptoms following childbirth. In the study by Ballard et al,¹¹³ 4 cases with symptom profiles of PTSD were

presented, and in the study by Fones¹¹⁴ an additional case following a particularly painful childbirth experience was recorded. The authors noted that some of the affected mothers experienced difficulties with mother-infant attachment as a result of their birth experience, and Fones reported avoidance of future childbirth, including requests for sterilization or termination of a subsequent pregnancy. Aside from attachment difficulties and avoidance symptoms, dissociation, numbing, intrusive recollections, nightmares, sleep disturbances, and other apparently trauma-induced symptoms have been documented.¹¹⁵

In one of the first attempts to quantify symptoms in a larger sample, Ryding et al¹¹⁶ found that within a few days postpartum 75% of mothers who underwent emergency cesarean section considered it to be a traumatic event, with 48% experiencing intrusive recollections of the delivery and 24% reporting persistent arousal. One to 2 months postpartum, 33% were still experiencing intrusion symptoms and 33% reported symptoms of persistent overarousal. Although none of the mothers completely met the necessary criteria for PTSD, 13 of the 25 mothers studied were experiencing some of the symptoms associated with posttraumatic distress.

Following childbirth the infant's health status can provide an additional potentially traumatic stressor. In one of the first articles written about the psychological effects of premature delivery, Kaplan and Mason¹¹⁷ stated that mothers perceived the premature birth of their child as a threatening event and often expected the child to die. Since that article appeared, numerous quantitative and qualitative studies have reported that both mothers and fathers identify feeling threatened with the possibility that their medically fragile infant could die.^{118–121}

Benfield et al¹²² examined 101 mother-father pairs of parents with a child in a neonatal intensive care unit (NICU). At the time of the infant's discharge, more than half of the fathers and more than 60% of the mothers in the study reported that during the infant's hospitalization they had thoughts that the baby might die. In fact, the grief reactions of these parents with surviving infants were similar to those of parents whose infants did not survive. Jeffcoate et al¹²³ also reported that 60% of mothers and fathers feared that their child would die, while Pederson et al¹²⁴ found that 78% of mothers of medically fragile preterm infants reported feeling uncertain that their child would survive in comparison with 24% of parents of healthy preterm infants.

Affleck and colleagues studied 94 mothers of infants who had been hospitalized in a NICU. Six months after the child's discharge, 89 mothers reported

that they “were experiencing involuntary memories cued by events.”^{125(p73)} The most common of these involuntary memories centered on how sick or near death their child had been. Several of the mothers spontaneously reported that the memories were actually more distressing than the original events had been. Such intrusive recollections have also been reported elsewhere.^{117,126}

Aside from intrusive recollections, another cardinal feature of PTSD is avoidance of cues that may remind one of the traumatic stressors. Avoidance may be expressed through avoiding thoughts, feelings, conversations, activities, places, or people associated with the trauma. The individual may not have full recall, have a restricted range of affect, feel detached, have diminished interest, and/or sense a foreshortened future.¹⁰⁰

Such symptoms have been documented during the perinatal period. Hynan¹²⁷ noted that parents may avoid naming their child initially because of the fear that the child may not survive. Hynan states that this may initially help the parents cope with the threat of their child’s death, but that it may also interfere with necessary attachment and bonding to the child. Kaplan and Mason¹¹⁷ found that some of the mothers of premature infants in their study chose not to see their baby even when circumstances permitted them to do so. In another study, Affleck et al reported that mothers who attempted to utilize avoidance behaviors prior to discharge were also likely to continue utilizing avoidance strategies at both 6 and 18 months postdischarge.¹²⁸

During the first 3 months following the emergency apnea of their child, Light and Sheridan reported “psychic numbing”^{126(p669)} in 62.5% of parents. Thirteen months following the emergency apnea event, 46% were still experiencing “psychic numbing.”^{126(p669)} Jeffcoate et al¹²³ compared mothers of premature infants with mothers of full term infants in terms of the length of time taken to feel love for their child. While 76% of mothers of full-term infants reported feeling love for their child within 24 hours after the birth, only 31% of mothers of premature infants reported feeling love for their infant within 24 hours. For 50% of the mothers of premature infants, feelings of love were delayed longer than 2 months. Instead, the mothers reported feeling “numbness,”^(p141) which prevented the mothers from experiencing affectionate feelings toward their infants.

The last broad area of PTSD symptoms is characterized by increased arousal. These signs include sleeping disturbances, irritability or anger outbursts, concentration difficulties, hypervigilance, and exaggerated startle response.¹⁰⁰ Light and Sheridan¹²⁶ reported that in the first 3 months following the emergency apnea of

their infant, 62.5% of parents experienced sleep difficulties. Between 4 and 12 months following the event, 75% of parents reported sleep difficulties. Thirteen months following the emergency sleep apnea, 65% of parents continued to report that they were experiencing sleep difficulties. Similarly, Benfield et al¹²⁹ found that at the time of the infant’s discharge from the NICU more than 70% of fathers and more than 80% of mothers were experiencing difficulty sleeping. Clearly, a full range of symptoms associated with PTSD is evident in the perinatal period.* However, it is important to remember that distress can embody many forms and range from relatively mild to quite severe. For example, one study reported that 43% of mothers and 69% of fathers of premature infants reported having an unpleasant first impression of their infant, although most reported that this feeling subsided once the initial shock of seeing their fragile infant had passed.¹³⁴ In contrast, a different study noted that the behavior of parents of premature infants may “appear psychotic”^(p30) as they become overwhelmed by their raw emotions, but have no organized approach for coping with those emotions.¹³⁵ It is imperative that healthcare team members be attentive to the range of mental health reactions and needs that parents may evidence.

IDENTIFICATION OF DISTRESS IN MOTHERS

Over the past several years, a mechanism for routinely identifying distressed mothers who are experiencing perinatal symptoms of posttraumatic distress has been developed. The Perinatal Posttraumatic Stress Disorder Questionnaire (PPQ) was designed specifically for this purpose.¹³⁶ For individuals who gave birth more than 4 months ago, the 2006 PPQ is recommended because it is phrased in past tense.¹³⁶ For those who have given birth more recently, the PPQ in Table 1 is recommended because it phrases the questions in present tense. On either version of the PPQ, there are 14 questions that the mother responds to as *not at all* (0 point); *once or twice* (1 point); *sometimes* (2 points); *often, but less than 1 month* (3 points); or *often, for more than a month* (4 points). Responses to the questions are summed for a total score. A score of 19 or higher on the PPQ indicates clinically significant distress that merits referral of the mother to a mental health care professional. Nursing staff are encouraged to routinely screen mothers by administering the PPQ following infant delivery and again during postpartum checkups.

*References 9, 21, 113, 115, 116, 123, 125-127, 130-133.

Table 1. Perinatal Posttraumatic Stress Disorder Questionnaire^a

	Not at all	Once or twice	Sometimes	Often, but less than 1 month	Often, for more than 1 month
Do you have bad dreams of giving birth or of your baby's hospital stay?					
Do you have upsetting memories of giving birth of your baby's hospital stay?					
Do you have any sudden feelings as though your baby's birth was happening again?					
Do you try to avoid thinking about childbirth or your baby's hospital stay?					
Do you avoid doing things that might bring up feelings you have about childbirth or your baby's hospital stay (eg, not watching a TV show about babies)?					
Are you unable to remember parts of your baby's hospital stay?					
Have you lost interest in doing things you usually do (eg, have you lost interest in your work or family)?					
Do you feel alone and removed from other people (eg, do you feel like no one understands you)?					
Has it become more difficult for you to feel tenderness or love with others?					
Do you have unusual difficulty falling asleep or staying asleep?					
Are you more irritable or angry with others than usual?					
Do you have greater difficulties concentrating than before you gave birth?					
Do you feel more jumpy (eg, do you feel more sensitive to noise or more easily startled)?					
Do you feel more guilt about the childbirth than you feel you should feel?					

^aThis measure may be copied and distributed for clinical and research purposes.

The PPQ may also be used to monitor the effectiveness of intervention or support services that are provided to the mother by repeatedly administering the PPQ over time (on a weekly basis, for example). A change in score that exceeds 6.6 raw points indicates reliable change in the individual's symptom severity. That is, an increase in the mother's raw score of 6.6 or more indicates reliable worsening of symptoms, while a decrease in raw score of the same or greater magnitude indicates reliable improvement.

The PPQ has demonstrated excellent internal consistency ($\alpha = .85^{137}$ to $.90^{136}$) and test-retest reliabilities ($r = 0.92^{137}$). The convergent and discriminant validity of the PPQ has also been supported in a series of studies^{136,138,139} and indicates that the PPQ is not merely assessing generalized distress or distress stemming from postpartum depression, but rather it is mea-

suring the symptoms specifically associated with traumatic squealae.^{136,139}

SUMMARY

The broad well-developed literature on traumatic stress may serve to further understanding distressing birth experiences while this specific body of research emerges.

Currently, much is known about risk factors that may predict various outcomes to stressors. First, it should be noted that the most common outcome is recovery. Certain personality variables, such as agreeableness and conscientiousness, appear to be helpful in promoting this positive outcome. In addition, social support may help new parents cope and process their stressful experiences.

Table 2. Top-10 neonatal nursing implications

1. In taking parent history, ask about exposure to traumatic events. In particular, pay special attention to (a) whether any were relatively recent or (b) whether any were interpersonal in nature. If either is true, the parent is more likely to evidence less effective coping responses and be at greater risk for unremitting distress meriting clinical attention.
2. In taking parent history, ask about mental health diagnoses. If there is known borderline, antisocial, or narcissistic personality disorder, the parent is at greater risk for posttraumatic stress.
3. Watch parent emotional behavior carefully both initially, during visits to the neonatal intensive care unit, and at postpartum checks. Sustained, negative emotionality, low agreeableness, or low conscientiousness may result in parent being at greater risk for lasting emotional difficulties.
4. Support and reinforce positive emotionality, agreeableness, and conscientious behaviors by complimenting it when it is displayed.
5. Attend to, and modify if necessary, the social support network available to the parent to improve subjective feelings of resiliency, lessen somatic symptoms, improve subjective health ratings, and decrease general distress. This may involve connecting parents with other parents with similar experiences via hospital support groups or online communities.
6. Foster supportive spousal relationships by creating an environment promoting parental involvement with not only their newborn/infant but also one another, educate both parents as needed, and refer either/both parent for formal support systems if necessary (eg, social work referral, pastoral care, psychological counseling/therapy, etc).
7. Expect that nearly all parents will evidence some signs of distress, but take time to repeatedly instill hope and reassure that most do not experience unremitting distress.
8. Maintain safety through close monitoring. Those with a history of violence and feeling a desire for revenge or desperation are more likely to aggress against others.
9. Appreciate that the childbearing experience and the perception of the infant's health status are subjective to parents.
10. Expect a full range of symptoms (eg, substance abuse, eating disorders, etc) and be prepared to refer for evaluation for those symptoms. *Routinely assess for the most common forms of distress: depression and posttraumatic stress disorder.*

Unfortunately, outcomes are not positive for all exposed. A variety of symptoms and mental disorders may emerge, including PTSD. The personality factor of neuroticism as well as personality disorders such as borderline personality disorder and antisocial personality disorder may be predictive of PTSD. In addition, previous traumatization and lack of social support may serve to exacerbate recent trauma reactions. A summary of the nursing implications presented in this article is provided in Table 2.

Despite the grim potential for certain outcomes, the PPQ may be useful to providers routinely employing it with mothers. This brief measure can serve as a reliable tool to identify clinically significantly distressed

mothers and also to monitor changes in distress (either lessening or intensification) over time. As such, it holds potential for use in outcome studies of psychosocial interventions that may target distress mothers.

Although this measure is well established for use with mothers, small samples of fathers have, thus far, prevented validation with this group. Future research examining fathers is planned to address this need and determine whether fathers share similar symptoms of distress or if further measure development is needed to identify gender-specific service needs. It is hoped that such interventions improve not only maternal well-being but also child developmental outcomes and family functioning.^{140,141}

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