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SHORT COMMUNICATION

Is childbirth-induced PTSD associated with low maternal attachment?

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Abstract

Few studies examined maternal attachment in childbirth-related postpartum posttraumatic stress disorder (PP-PTSD). We studied 685 postpartum women, assessing for PP-PTSD, non-childbirth PTSD, maternal attachment, pre-birth, birth, and post-birth factors. Attachment was lower in PP-PTSD than in non-childbirth PTSD and no PP-PTSD. Hierarchical regression showed that PP-PTSD predicted less maternal attachment above and beyond pre-birth psychiatric conditions, acute distress in birth, and lack of breastfeeding. Childbirth-induced posttraumatic stress may interfere with the formation of maternal attachment, warranting screening of at-risk women.

Keywords Posttraumatic stress disorder · Childbirth · Attachment · Bonding · Traumatic stress · Postpartum · Infant

Maternal attachment from the very beginning of the baby's life facilitates optimal psychological and physical growth. Early attachment may alter neural development, and impaired attachment may result in permanent disruptions in the infant's developing brain. Some mothers fail to achieve positive attachment with their infant. Depressed and anxious mothers have greater difficulties developing maternal feelings toward their infant and are less likely to provide sensitive caregiving, providing fewer opportunities for emotional attunement and reciprocal engagement (Brockington et al. 2006). This may endanger secure attachment in the infant and influence maternal behavior toward their own offspring, implying a non-genomic intergenerational transmission of maternal environment.

The condition of traumatic stress disorder induced by a highly stressful childbirth experience is receiving growing recognition of late. Postpartum posttraumatic stress disorder (PP-PTSD) is not limited to partial pregnancy and preterm delivery with infant complications. Approximately a quarter of women report elevated PP-PTSD symptoms, and up to 6% endorse the full-blown condition within the first months after giving birth to a healthy baby at the expected time (Dekel et al. 2017; Cook et al. 2018). Adverse effects of non-childbirth-related PTSD on maternal attachment are evident in decreased reported maternal sensitivity and neural activity in response to child stimuli (Schechter et al. 2017).

Little is known on whether PP-PTSD—a psychopathology tightly linked to the infant—may interfere with the mother's attachment to her infant. Intrusive childbirth reminders coupled with hypervigilance and attempts to avoid reminders manifested in symptoms of PP-PTSD may limit maternal sensitivity, altogether possibly interfering during the sensitive period for the formation of the attachment relationship.

Existing quantitative studies on maternal attachment and PP-PTSD in the early postpartum period are relatively few, and their findings are mixed (see Cook et al. 2018, for a review). Some studies show that as might be expected, higher PP-PTSD symptom severity is associated with less maternal attachment (e.g., Davies et al. 2008) although a few document no association (e.g., Ayers et al. 2007; Parfitt et al. 2014). An issue to consider is the role of PP-PTSD in maternal attachment in the context of other factors that can disrupt attachment. Factors that have to do with the mother such as trauma history (Bosquet Enlow et al. 2014) and psychopathology, as well as stressors in childbirth (Seng et al. 2013), and complications preventing immediate bonding may all limit maternal attachment. To the best of our knowledge, no study examined the unique contribution of PP-PTSD to maternal attachment formation.

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In the following study, we collected data from a large sample of postpartum women in the first months following childbirth including some who had PTSD symptoms related to childbirth. We investigated whether PP-PTSD symptoms limit maternal attachment even more than non-childbirth PTSD and whether PP-PTSD interferes with maternal attachment above and beyond premorbid factors.

Methods

Participants

This study is part of a project on psychological outcomes of childbirth (Dekel et al. 2018). We recruited participants through announcements on postpartum websites who were at least 18 and gave birth within the past 6 months (40, 36, and 24% were around 1, 3, and 6 months postpartum, respectively). They completed an anonymous survey between November 2016 and April 2017. The study received exemption from Massachusetts General Hospital Human Research Committee.

Participants were 685 women on average 31 years old ($SD = 4.80$) with the majority being primiparous (56%), had a planned pregnancy (57%), delivered a healthy baby at term (79%), and had a vaginal birth (64%). A third reported mental health problems before birth. Participants had at least college education (71%); were married (93%), middle class, ethnically White (90%), and religiously affiliated (78%); and lived in North America (66%).

Measures

PTSD symptoms related to childbirth were assessed with the commonly used PTSD checklist for DSM-5 (PCL-5; Weathers et al. 2013) with "most recent childbirth" as index event. Twenty items assess the severity of PTSD symptoms over the past month rated from 0 (not at all) to 4 (extremely). It has good psychometrics (α was 0.95).

In accordance with DSM-5, probable PP-PTSD was defined as moderate symptom severity (scores ≥ 2) to include at least 1 re-experiencing, 1 avoidance, 2 alterations in cognitions and mood, and 2 reactivity and hyperarousal symptoms; as well as perceived danger in birth (criterion A) and current distress and impaired functioning (criterion G). PCL-5 for probable general PTSD (non-childbirth specific) was also completed.

Maternal attachment was assessed using the Maternal Attachment Inventory (MAI; Müller 1994). This 26-item self-report measures maternal feelings toward and perceptions of the infant. Responses are scored from 1 (almost never) to 4 (almost always). Total scores are between 26 and 104 with higher scores indicating more attachment. It has acceptable internal consistency (α was 0.97).

Childbirth-related acute distress during/immediately after childbirth was assessed using the well-validated 13-item Peritraumatic Distress Inventory (PDI; Brunet et al. 2001). It has good psychometrics (α was 0.89).

Socio-demographic (age, education), mental health and trauma history, and childbirth-related information (primiparous, medical complication in birth and in infant, delivery mode, skin-to-skin, rooming-in with baby in hospital, and breastfeeding) was collected with single items.

Results

Overall, 8.6% of data was missing with Little's Missing Completely At Random (MCAR) test indicating missing at random, $\chi^2_{(2654)} = 1642.80$, $p = 1.00$. Multiple imputation was used for missing data.

Twelve percent of participants ($n = 79$) had PP-PTSD; 16% ($n = 107$) had general PTSD; 5% ($n = 31$) had comorbid PP-PTSD and general PTSD; and the rest had no PTSD ($n = 468$). To examine differences in maternal attachment by PTSD status, we conducted an analysis of variance (ANOVA) with MAI total scores as the dependent variable. The analysis was significant $F(3397) = 9.79$, $p < 0.001$ with significantly lower maternal attachment levels in PP-PTSD than in no PTSD and even general PTSD, but no differences were found with the comorbid group (see Table 1).

To examine whether PP-PTSD predicts maternal attachment accounting for premorbid variables, we utilized hierarchical multiple regression. Pre-childbirth variables including socio-demographics and mental health and trauma history were entered in the first step. Next, childbirth stressor variables and complication in infant were entered in the second step. Post-childbirth attachment-related variables were entered in the third step, and lastly, maternal mental health pertaining to PP-PTSD and general PTSD was entered (see Table 2).

The variables accounted for 20.9% of the variance in predicting maternal attachment, $F(13,389) = 7.63$, $p < 0.001$. Age and mental health explained 4% of the variance. The younger the age of the women and having a mental health condition prior to childbirth, the less attachment reported. Regarding birth factors, although mode of delivery and birth complications did not contribute to attachment, mother's distress during birth and complication in the infant each had a significant contribution of a total of 7% of the variance. The higher the distress endorsed, the less attachment reported. Post-delivery attachment variables explained a total of 3% of the variance with non-exclusive breastfeeding predicting less attachment. Finally, maternal postpartum mental health explained 6% of the variance. PP-PTSD, but not general PTSD, added a significant contribution above and beyond premorbid factors.

Table 1 Analysis of Variance (ANOVA) comparisons of maternal attachment by PTSD status

	M	SD	Post hoc comparisons		
			No PTSD	PP-PTSD	General PTSD
No PTSD	97.20	10.84			
PP-PTSD	85.89	18.21	0.00		
General PTSD	92.24	17.62	0.01	0.04	
Comorbid PP-PTSD and general PTSD	89.08	15.99	0.00	0.38	0.30

Maternal Attachment indicated by scores on Maternal Attachment Inventory. Post hoc comparisons based on least significant difference (LSD); values represent *p* values

ANOVA analysis of variance, *PP-PTSD* childbirth-related posttraumatic stress disorder, *General PTSD* PTSD not related to childbirth

Discussion

Our findings indicate that women experiencing probable PTSD related to childbirth in the first months postpartum had lower levels of maternal attachment than those with no PTSD and even lower attachment than women endorsing probable PTSD in relation to a non-birth-related trauma. We also found that having childbirth PTSD appears to interfere with maternal attachment above and beyond preexisting psychiatric conditions, having a stressful birth, and non-exclusive breastfeeding. This underscores the importance of facilitating postpartum psychological adjustment, and the potential disruption in attachment when adjustment is threatened.

Table 2 Hierarchical multiple regression for maternal attachment by study predictors

Variable	β	R^2 change	R^2
Block 1: pre-childbirth		0.05	0.05
Age	0.15*		
Education	− 0.10		
Mental health history	− 0.15*		
Trauma history	0.03		
Primiparous	− 0.06		
Block 2: childbirth		0.07	0.12
Complications in childbirth	0.04		
Emergency cesarean vs. other	0.03		
Peritraumatic distress	− 0.30*		
NICU admission	0.11*		
Block 3: immediate post-birth		0.03	0.15
Skin-to-skin contact	0.09		
Rooming-in	− 0.08		
Breastfeeding	0.14*		
Block 4: postpartum		0.06	0.21
PP-PTSD	− 0.35*		
General PTSD	− 0.01		

PP-PTSD childbirth-related posttraumatic stress disorder, *General PTSD* PTSD not related to childbirth, *Peritraumatic distress* distress during and immediately after birth, *NICU* Neonatal Intensive Care Unit

*$p < 0.05$

Our study broadens the notion of maternal attachment disturbance in maternal psychopathology to the realm of childbirth evoked posttraumatic stress. The findings suggest that the mother's traumatic stress reaction to the birth and enduring PTSD symptoms following birth, rather than objective birth stressors (i.e., obstetrics complications) or disturbance in attachment behavior immediately following birth, can be aversive for early attachment. Dysregulation in neurohormones involved in the (re)activity of the hypothalamic-pituitary-adrenal (*HPA*) *axis* may underline lowered maternal attachment in PP-PTSD and worsen symptoms, but other mechanisms should be considered. Inconsistency between our findings and studies reporting no association between PP-PTSD and maternal attachment may be due to methodological differences in measurement such as assessing care of the baby rather than emotional bonding (Ayers et al. 2007) and issues with sample size and power to detect effects (Parfitt et al. 2014).

Shortcomings of the study include cross-sectional assessment of self-reported maternal affectionate attachment without including more negative aspects of attachment and observational assessment. Although PTSD was measured according to DSM criteria, we did not conduct a clinical diagnosis. Other antenatal and postnatal factors implicated in maternal attachment may have been overlooked, including but not limited to attachment style and obstetrical problems. The large sample and MAI scores similar to other samples may not overcome potential bias in an online sample. Prospective, repeated assessment of PP-PTSD and maternal attachment using objective measures is warranted.

In summary, our findings demonstrate that women with childbirth-related PTSD might be at risk for difficulties connecting with their infant from the first months after birth. Effective psychological and biological treatments for at-risk women could be implemented in routine obstetrical care to prevent attachment deficits.

Compliance with ethical standards

Ethical approval All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Partners (Massachusetts General Hospital) Human Research Committee granted this study exemption.

Informed consent This study entailed an anonymous online survey; no personal identifiable information was collected. Participants were informed that by agreeing to complete the study survey, they are implying their consent to participate in the study.

Conflict of interest The authors declare that they have no conflict of interest.

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