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Prevalence of post-traumatic stress disorder in pregnant women with prior pregnancy complications

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Abstract

Objective—To assess the prevalence of post-traumatic stress disorder (PTSD) in pregnant women with prior pregnancy complications.

Methods—Seventy-six pregnant women at a maternal–fetal medicine referral clinic were asked to complete an anonymous questionnaire. Fifty-six women had a prior pregnancy complication (study group), and the remaining 20 had none (comparison group). Subjects were assessed with a questionnaire consisting of a modified patient-rated version of the Clinician Administered PTSD Scale (CAPS). The modified CAPS was used to approximate the prevalence of full or partial PTSD related to a prior pregnancy complication using two scoring rules, the rule-of-3 (original rule) and rule-of-4 (more stringent rule).

Results—The prevalence of full PTSD among women with prior pregnancy complications was 12.5% and 8.9% based on the rule-of-3 and rule-of-4, respectively. For partial PTSD, the prevalence was 28.6% based on the rule-of-3 *versus* 17.9% based on the rule-of-4. The most common type of complication was miscarriage, accounting for 73.5% of the reported complications. None of the women in the comparison group met criteria for full or partial PTSD.

Conclusions—The prevalence of PTSD in pregnant women with a prior pregnancy-related complication is considerable. These findings provide additional evidence that pregnancy complications can be experienced as traumatic, and as such lead to partial or full PTSD symptoms.

Keywords

Pregnancy; post-traumatic stress disorder; pregnancy complications; maternal anxiety

Introduction

Pregnancy complications are common and highly distressing events. Miscarriage, the spontaneous termination of an intrauterine pregnancy prior to 20 weeks' gestation, is the most common pregnancy complication. Between 20 and 60% of all conceptions and 15% of clinically documented pregnancies greater than 6 weeks' gestation result in miscarriage [1]. Of the women who carry a pregnancy to term, approximately 30% experience at least one obstetric complication at the time of delivery [2]. Pregnancy loss and obstetric complications have been established as traumatic events that can lead to the development of post-traumatic stress disorder (PTSD) [3–6].

PTSD is characterised by symptoms of re-experiencing (e.g., recurrent thoughts, nightmares, flashbacks), avoidance (e.g., avoiding cues and thoughts related to the trauma, withdrawal from others, restricted affect) and increased arousal (e.g., insomnia, irritability, concentration problems, hypervigilance) following exposure to a traumatic event (Table I) [7]. To meet the fourth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria for the diagnosis of PTSD, an individual must endorse at least one re-experiencing symptom, three avoidance symptoms and two symptoms of arousal. There is growing evidence that partial PTSD (i.e., symptoms below the threshold for the DSM-IV diagnosis) is approximately as prevalent as full PTSD, and that individuals who meet criteria for partial PTSD are often as impaired as those who meet the full criteria [8,9].

PTSD has been observed in up to 25% of women in the immediate aftermath of a pregnancy loss [10]. It is estimated that 50% of women who miscarry become pregnant again within 12 months of the loss [11]. Studies have suggested that prior pregnancy loss is a risk factor for developing anxiety and depression during subsequent pregnancies, and that the risk is greater if the pregnancy occurs within one year of loss [11,12]. In addition, it has been observed that subsequent pregnancies may serve as a reactivating stressor for these women [13,14]. Turton et al. discovered that 21% of women with a prior pregnancy loss experience PTSD in subsequent pregnancies [14].

Assessment and treatment of undiagnosed PTSD in pregnant women with a prior obstetric complication is critical given the growing literature regarding the adverse effects of psychological distress and mental illness on maternal well being and fetal development. Pregnant women with a prior perinatal loss have a lower quality of life than women without a history of pregnancy loss [13]. Women with PTSD in pregnancy are at higher risk for several obstetric complications including ectopic pregnancy, miscarriage, hyperemesis and preterm contractions [15]. Maternal anxiety has been associated with pre-term deliveries and lower birth weights, as well as impairment of fetal brain development and childhood behavioural disturbances [16–19]. The purpose of this study was to assess the rate and characteristics of full and partial PTSD in pregnant women with a history of previous pregnancy-related trauma.

Methods

Over a 12-month period women were screened as they presented for evaluation at the Yale Maternal Fetal Medicine practice, which serves as an outpatient referral service for Connecticut. The study site chosen has over 15,000 encounters per year, and the most common reasons for referral are anatomical survey (20.2%), advanced maternal age (19.8%), nuchal translucency (15.1%) and assessment of fetal growth (10.7%). Women were approached and asked whether they would be willing to anonymously complete a self-rated questionnaire regarding the outcome of previous pregnancies and several behavioural measures while they were waiting for their clinician. A total of 120 women completed the questionnaire and were given a \$5 gift certificate to a local bookstore for doing so. They were also offered further information about psychiatric services and treatment, and given the option of undergoing further screening via a clinician interview. Participants that agreed to identify themselves and undergo a clinician interview gave written informed consent. This project was reviewed and approved by the Institutional Internal Review Board at Yale University School of Medicine.

The anonymous questionnaire was used to assess for presence of PTSD symptoms related to any previous pregnancy loss or complication, and consisted of a modified patient-rated version of the Clinician Administered PTSD Scale (CAPS) which we will refer to as the modified CAPS (m-CAPS). The original CAPS is a 30-item instrument that contains separate 0–4 frequency and intensity scales for the symptoms that compose a diagnosis of PTSD [20]. It is widely used in the assessment of the diagnosis and severity of PTSD and has been validated in both veteran and non-veteran populations. The m-CAPS was used in this study to assess recent rather than lifetime symptoms of PTSD. The subjects were asked to assess their symptoms based on the previous 2 weeks. The m-CAPS questions were tailored for the purposes of this study by referencing the previous pregnancy loss/complication as the potentially traumatic event in question. The symptoms in criterion B, C and D were also modified as depicted in Table II.

The prior allowable pregnancy complications included miscarriage, intrauterine fetal demise, anembryonic pregnancy, ectopic pregnancy, placental abruption, placenta previa, serious genetic abnormality, vacuum extraction at delivery or any complication that led to prolonged hospitalisation of the infant or infant demise within 10 days of delivery.

The m-CAPS was used to obtain an approximate gauge of the prevalence of PTSD meeting full or partial DSM-IV criteria in this population of high-risk women. Although the definition of partial or subsyndromal PTSD has varied from study to study, we have chosen to use the criteria as described by Blanchard et al. [21]. Specifically, subjects were classified as having subsyndromal PTSD if they met Criterion B (reexperiencing) and either Criterion C (avoidance/numbing) or Criterion D (hyperarousal), but not both.

The m-CAPS assessed symptoms for both frequency and intensity in the past 2 weeks, and were scored using the rule-of-3 and the rule-of-4 reported by Blanchard et al. [21]. The rule-of-3 is the original working rule described in the CAPS manual [20], in which an item is considered a symptom if the frequency score is 1 or greater and the intensity score is 2 or

greater. According to the rule-of-4 an item is considered a symptom if the severity score (frequency + intensity) is 4 or greater (i.e. 1-3, 2-2, 3-1).

The women who agreed to identify themselves and undergo further evaluation were screened with a formally administered unmodified CAPS. They were administered the original version of the CAPS to assess both current and lifetime symptoms of PTSD [20]. They were scored using the rule-of-3, the original working rule used to score the CAPS [20]. They were also evaluated with a clinician administered Structured Clinical Interview for Diagnosis (SCID) for the DSM-III to assess for possible comorbid psychiatric illnesses.

Results

Description of complications/losses

A total of 120 women agreed to complete the questionnaire, of these 44 were excluded from the study because of incomplete questionnaires, or for having no prior pregnancy complications and rating themselves solely based on a current pregnancy complication. Of the remaining 76 subjects with completed questionnaires, 20 had no prior or current pregnancy complications, and had been referred due to advanced maternal age or for a routine second trimester anatomical survey. These women served as a 'non-traumatised' comparison group. The remaining 56 subjects had a prior pregnancy complication and rated themselves based on that prior pregnancy. Among the 56 subjects with a prior complication, 23 agreed to identify themselves and perform clinician interviews, but only 18 actually underwent a clinician interview with the unmodified CAPS [20]. The characteristics of subjects that identified themselves for further evaluation were not different from those that elected to remain anonymous.

The average gestational age for all included subjects ($n = 76$) was 18 weeks, the mean gravidity 3.89 and mean parity 1.27. For the larger sample, there was little demographic information collected due to the anonymous nature of the study. However, of the 23 self-identified subjects the mean age was 33 years, 78.3% ($n=18$) were Caucasian, 13% ($n=3$) were Asian, and 8.7% ($n = 2$) African-American. This was consistent with the general demographic information from the Yale Maternal Fetal Medicine service (mean age 31, gravidity 2.71, parity 1.27).

Twelve different types of complications were reported by the 56 subjects with a prior history (Table III). The most common type of complication was miscarriage (pregnancy loss before 20 weeks' gestation), accounting for 73.5% of reported complications. Of the miscarriages, 90.7% were unspecified, 5.9% were anembryonic pregnancies and 4.4% were due to chromosomal abnormalities. Ectopic pregnancies were the second most common type of complication (5.9%). Chromosomal abnormalities and anembryonic pregnancies that did not result in a miscarriage, but led to termination of the pregnancy, together accounted for 7.8% of the reported complications. The remaining eight complications accounted for 10.8% of all the complications reported among the 56 women. The majority of the women had one complication (50%), 28.6% had two complications, 12.5% had three complications and 8.9% had four or more complications.

Prevalence of PTSD according to self-ratings

Of the 56 women who experienced a prior pregnancy complication, 28.6% met criteria for partial PTSD based on the m-CAPS questionnaire rule-of-3 scoring vs. 17.9% based on the more stringent scoring rule-of-4 (Table IV). On the basis of the rule-of-3 and rule-of-4, 12.5% and 8.9% of women met criteria for full PTSD, respectively. As expected, none of the women in our comparison group (those without a previous pregnancy loss/complication) who completed the initial self-assessment met criteria for partial or full PTSD based on the m-CAPS, given that our instrument only assessed for a pregnancy related trauma. This does not account for any possible PTSD symptoms that these women might experience secondary to a non-pregnancy related trauma.

Prevalence of PTSD according to the CAPS (Original Version)

Of the 18 women who underwent subsequent clinical evaluation with study staff, 5 (27.7%) had partial PTSD based on the m-CAPS. Of these 5 women one had partial PTSD and one had full PTSD related to a miscarriage based on the unmodified version of the CAPS. The remaining 3 women did not meet criteria for current partial or full PTSD related to a pregnancy complication based on the unmodified CAPS. Two of these 3 women, however, did meet criteria for lifetime PTSD, one for partial PTSD related to a pregnancy loss, and the other for full PTSD due to sexual abuse as a child. The remaining 13 subjects did not meet criteria for partial or full PTSD based on the m-CAPS questionnaire. Of these 13 subjects, one had current partial PTSD related to a pregnancy complication, and two had lifetime PTSD from non-pregnancy related traumas (motor vehicle accident and childhood physical abuse) based on the unmodified CAPS. Overall, the self-rated modified CAPS detected 2 out of the 3 cases of current partial/full PTSD diagnosed by the unmodified CAPS.

Comorbid psychiatric illnesses

Ten of the women who were evaluated with the SCID met criteria for other psychiatric disorders, six of which met criteria for more than one psychiatric illness. Six of the women met criteria for major depressive disorder (MDD), all of which were in full or partial remission. Four of these six women also had full PTSD according to the unmodified CAPS. The remaining diagnosis established by the SCID included two subjects with past polysubstance dependence; two with a history of panic disorder; two with a history of bulimia; two with a history of obsessive-compulsive disorder (OCD); two with current adjustment disorder; one with current generalised anxiety disorder (GAD); and one with a history of social phobia. Two of the subjects with partial PTSD and the one with full PTSD according to the questionnaire had comorbidities with MDD and polysubstance dependence.

Discussion

Our study provides further evidence that pregnancy complications and losses can be experienced as a traumatic event and as such can lead to partial or full PTSD symptoms. The estimated lifetime prevalence of PTSD among women of all ages is between 10.4% and 12.3% [22,23]. Our findings of full PTSD in women with prior pregnancy complications in subsequent pregnancies (12.5% for rule-of-3 and 8.9% for rule-of-4 according to the m-

CAPS) are comparable with the established literature. Our results are also similar to rates of PTSD found with other obstetrical complications and general medical illnesses: pre-eclampsia (17–28%) [4], emergency caesarean section (9%) [24], women with newly diagnosed breast cancer (10%) [25] and prior myocardial infarction (8–16%) [26]. Furthermore, the cases of partial PTSD detected by our questionnaire were almost double the cases of full PTSD. This is an important finding given that women with partial PTSD exhibit clinically meaningful levels of functional impairment in association with their symptoms that approach those produced by full PTSD [9].

Clinically, these women with partial and full PTSD are plagued by intrusive thoughts of the previous loss and avoid reminders, which are pervasive and inescapable during future pregnancies. Their failure to attach to the present fetus is evidenced by their lack of joy about the baby and their resistance to ‘getting excited’ in case they experience another loss. They are hypervigilant regarding aches, pains, fetal activity and are extremely anxious, frequently interpreting normal events as harbingers of a repeat trauma. In addition, inappropriate guilt and self-blame are common and predict a more severe and chronic course [27].

Although the mother with PTSD is clearly distressed and in need of treatment for her own well-being, the physiologic symptoms and neuroendocrine consequences of anxiety, hyperarousal and dysphoria associated with PTSD create a suboptimal milieu for the developing fetus and provide additional cause for intervention. Anxiety and/or stress during pregnancy have been shown to increase the risk of preterm deliveries and lower birth weights [28–30], pre-eclampsia [31] and behavioral dysregulation in the offspring [19,32,33]. In a study of 1962 pregnant women, pregnancy-related anxiety was associated with a twofold increased risk of having a preterm delivery [29]. Depression, which is comorbid with PTSD in up to 50% of cases, is associated with neonatal irritability [34], and a heightened cortisol response to a novel stimulus that was correlated with negative affect in infants 4–6 months of age [35]. Avoidance symptoms characteristic of PTSD may interfere with the quality of the mother's relationship to her medical providers, hinder the development of an effective intimate support system and interfere with maternal–fetal/infant attachment.

Although PTSD related to a previous pregnancy loss or complication may resolve if the outcome of the present pregnancy is an uneventful delivery of a healthy baby, the potential for adverse effects on the pregnancy and offspring is unacceptable. Our findings support the imperative need for screening in high-risk populations in order to provide treatment to affected women given the known adverse effects of stress and anxiety on fetal development and maternal wellbeing. Based on our results, the self-rated modified CAPS questionnaire appears to be an effective and straightforward tool for the detection of potential partial and full PTSD in women with a prior pregnancy loss or complication. Without an effective screening tool, women presenting with the symptoms observed in our study may be treated with psychotropic medications without a full appreciation of the aetiology of the symptoms and without consideration of alternative treatments, including non-pharmacological ones. Therefore, the development of appropriate treatment strategies is also warranted, and is the subject of an ongoing study being funded by the March of Dimes (Epperson, PI).

The small sample size and anonymous self-reports are clear limitations of the current investigation. Greater numbers along with more detailed demographic information will allow improved heterogeneity and power, making these results more generalisable. Another specific limitation of the current investigation is the small number of subjects that underwent evaluation with both the m-CAPS questionnaire and one of the clinician administered interviews. Administering both the modified CAPS questionnaires and a structured interview to all subjects in future studies would help validate the reliability of m-CAPS questionnaire in detecting cases of pregnancy-related PTSD in this setting. Larger studies that include a SCID for all participants will also allow for subgroup analyses that take into consideration psychiatric comorbidities and prior psychiatric disease, including prior PTSD for non-pregnancy related trauma. In spite of these acknowledged study limitations, our results indicate that further studies as suggested are appropriate and necessary to further evaluate the prevalence and impact of full and partial PTSD in subsequent pregnancies among women with prior pregnancy complications, as well as suitable treatment modalities.

In conclusion, the prevalence of full and partial PTSD in women who become pregnant subsequent to a pregnancy-related trauma is considerable. Anxiety during pregnancy is not without risks to both mother and fetus, thus women who have experienced a previous pregnancy loss should be screened for the presence of clinically meaningful symptoms of PTSD.

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Table I

Diagnostic and statistical manual of mental disorders, 4th edition (DSM-IV) diagnostic criteria for PTSD.

Criterion A	(1) Exposure to traumatic event and (2) intense fear, horror or hopelessness in response to event
1 Criterion B symptom of re-experiencing:	Recurrent intrusive thoughts Nightmares Flashbacks
3 Criterion C symptoms of avoidance:	Avoiding cues and thoughts related to the trauma Withdrawal from others Restricted affect
2 Criterion D symptoms of increased arousal:	Insomnia Irritability Concentration problems Hypervigilance

PTSD, post-traumatic stress disorder.

Table II

Modified CAPS questions for criterion B, C and D.

For Criterion B	Having nightmares about their previous loss(es)
	Re-experiencing the event with prenatal visits
	Intrusive reminders of the event when noting changes in fetal movements or with pregnancy-related pains
For Criterion C	Avoiding thinking about or discussing the present pregnancy
	Avoiding the presence of other pregnant women or small children
	Avoiding preparing the house for the new baby
	Avoiding physical activity
For Criterion D	Feeling anxious and checking for fetal movements
	Poor concentration and focus
	Having difficulty sleeping

CAPS, Clinician-Administered PTSD Scale.

Table III

Summary of reported prior pregnancy complications.

Types of complications	Number of complications (<i>n</i> = 102)
Loss < 20 weeks gestation	75
Unspecified miscarriage (<i>n</i> = 68)	
Chromosomal abnormality (<i>n</i> = 3)	
Anembryonic pregnancy (<i>n</i> = 4)	
Loss > 20 weeks gestation	4
Unspecified (<i>n</i> = 4)	
Oligohydramnios/compressed cord (<i>n</i> = 1)	
Placental abruption (<i>n</i> = 1)	
Ectopic pregnancy	6
Chromosomal abnormality (D&C)	4
Vacuum extraction	3
Anembryonic pregnancy (D&C)	2
Placental abruption	2
Preterm premature rupture of membranes	2
Placenta previa	1
Spina Bifida	1
Meconium aspiration	1
Preterm labor & infant demise 8 days postpartum	1

D&C, dilatation and curettage.

Table IV

Rates of partial or full PTSD based on different scoring rules.

	No prior complication (<i>n</i> = 20)	Prior complication (<i>n</i> = 56)
No PTSD	20	18 (32.1%)
Partial PTSD Rule 3	0	16 (28.6%)
Partial PTSD Rule 4	0	10 (17.9%)
Full PTSD Rule 3	0	7 (12.5%)
Full PTSD Rule 4	0	5 (8.9%)

PTSD, post-traumatic stress disorder.