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Short communication

Racial and ethnic disparities in posttraumatic psychopathology among postpartum women

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ABSTRACT

People of color in the United States disproportionately bear the burden of trauma and posttraumatic stress disorder (PTSD). Pregnant women of color are at particular risk, as perinatal PTSD is associated with adverse maternal and child health. However, PTSD is a heterogeneous disorder comprising discrete symptom dimensions. Adopting a dimensional understanding of PTSD could aid in identifying women at-risk for the consequences of posttraumatic psychopathology and guide treatment selection. In a large sample of Latina, Black, and non-Hispanic White postpartum women in the United States ($N = 1663$), we examined racial and ethnic differences in the factors of the dysphoric arousal model—a leading dimensional model of PTSD. This model is characterized by five symptom dimensions: re-experiencing, avoidance, numbing, dysphoric arousal, and anxious arousal. Past-year trauma in this sample was common, afflicting nearly 70% of women. In unadjusted models, women of color exhibited more severe PTSD symptom levels across dimensions except for dysphoric arousal, with Black mothers particularly affected. In models adjusted for age, education, and poverty, Black women continued to report elevated symptoms of avoidance and, relative to Latina mothers, re-experiencing symptoms. In contrast, White women reported more dysphoric arousal symptoms relative to women of color. Illuminating differential patterns of symptom dimensions across racial and ethnic groups is critical to PTSD assessment and treatment and may shed light on disparities. Perinatal healthcare may be an important opportunity for posttraumatic symptom screening, and greater understanding of racial and ethnic variation in posttraumatic symptom dimensions can guide targeted intervention selection for perinatal women.

Introduction

Trauma exposure and posttraumatic stress disorder (PTSD) are racially and ethnically patterned, with Black individuals disproportionally impacted. In the United States, lifetime PTSD is higher among Black populations than among White or Latinx individuals (Alegría et al., 2013; Roberts et al., 2011). Relative to White populations, Black individuals report greater exposure to interpersonal trauma, violence, and combat (Asnaani and Hall-Clark, 2017), and trauma-exposed Black individuals are more likely to develop PTSD and experience a more chronic clinical course than their White counterparts (McLaughlin et al., 2019; Roberts et al., 2011; Sibrava et al., 2019). Latinx populations are also at risk. Relative to non-Latinos, Latinx individuals are at greater risk of developing and experiencing more persistent PTSD symptoms (Alcántara et al., 2013), and individuals of this ethnic background are disproportionately exposed to political violence (Alegría et al., 2013). However, despite bearing much of the burden of trauma and its psychiatric sequelae, racial and ethnic minorities are less likely to receive evidence-based treatments for PTSD (McClendon et al., 2020; Roberts et al., 2011).

These disparities in trauma and related psychopathology extend to the perinatal period, with pregnant Black women experiencing particularly high rates of trauma and PTSD (e.g., Dailey et al., 2011; Powers et al., 2020; Seng et al., 2011). Furthermore, PTSD during the prenatal period is associated with adverse birth outcomes (Cook et al., 2018; Rogal et al., 2007; Yonkers et al., 2014), which disproportionately afflict women of color (Martin et al., 2019). The chronic and traumatic stressors that excessively or exclusively impact these women, including

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discrimination, acculturative stress, and racial trauma, may contribute to disparities before and after birth (Conradt et al., 2020; Lehrner and Yehuda, 2018). The perinatal period is a transitory time involving numerous physiological and psychological changes, and trauma-related psychopathology during this time may confer unique risk. Documenting racial and ethnic disparities in posttraumatic symptoms can inform targeted interventions for mitigating the impact of PTSD in perinatal women on maternal and child health.

Although most research has considered PTSD as a binary diagnostic entity, PTSD is a heterogeneous disorder comprising discrete symptom dimensions (Armour et al., 2016; Galatzer-Levy and Bryant, 2013). To distill these symptoms into more homogeneous clusters, numerous confirmatory factor analyses have investigated the latent structure of PTSD. This research primarily supports three models: the four-factor dysphoria model (Simms et al., 2002), four-factor emotional numbing model (King et al., 1998), and five-factor dysphoric arousal model (Elhai et al., 2011). A recent systematic review concluded that the five-factor model was superior to both four-factor models (Armour et al., 2016). The dysphoric arousal model separates symptoms into five dimensions: re-experiencing (e.g., intrusions), avoidance (e.g., actively avoiding trauma-related reminders), numbing (e.g., anhedonia, restricted affect), anxious arousal (e.g., hypervigilance, exaggerated startle), and dysphoric arousal (e.g., sleep and concentration difficulties).

To broaden understanding of disparities in posttraumatic psychopathology, emerging research has considered how PTSD symptom dimensions may manifest across racial and ethnic groups. Most evidence suggests more severe symptoms across PTSD dimensions among people of color, although some nuances emerge when considering PTSD at the level of its dimensions. Studies using the emotional numbing model have found that Black and Hispanic male veterans are significantly more likely to endorse re-experiencing (Coleman et al., 2019; Koo et al., 2016), avoidance (Koo et al., 2016), and numbing (Koo et al., 2016) symptoms than their White counterparts. However, not all dimensions have been consistently elevated among racial and ethnic minorities. For example, Hispanic, Black, and White male veterans reported similar hyperarousal symptom levels (Coleman et al., 2019; Koo et al., 2016). Despite evidence supporting the dysphoric arousal model as a representation of PTSD dimensions—even across race and ethnicity (Arbona et al., 2019; Contractor et al., 2015; see Contractor et al., 2019 for review)—research is lacking on how severity of its symptom dimensions compares across diverse racial and ethnic backgrounds.

Furthermore, although PTSD is twice as common in women as men (Kessler et al., 1995), minimal research has examined differences in symptom severity among women of different racial and ethnic groups. In one study, symptom severity across the four factors of the emotional numbing model were equivocal between Black and White women veterans, and Hispanic women veterans reported greater numbing symptoms than their White counterparts (Koo et al., 2016). Among perinatal samples, recent research has examined PTSD symptom structure in circumscribed racial and ethnic groups, namely South American women (Gelaye et al., 2017; Reichenheim et al., 2018). In the one study of the dimensional structure of PTSD in postpartum women in the United States, we established that the five-factor dysphoric arousal model best-represented PTSD symptom dimensions in a large, diverse sample (Thomas et al., under review). In this study, we expanded this work by examining racial and ethnic differences in trauma exposure, PTSD symptoms, and symptom severity of the dimensions of the dysphoric arousal model in a sample of Latina, Black, and White postpartum women.

Methods

Participants and procedure

Data are from the Community Child Health Network (CCHN), a multi-year community-academic partnership studying maternal and child health in new parents in low-income communities. Postpartum women were recruited at delivery from one of five regions in the United States (for details, see Ramey et al., 2015). All community and institutional organizations approved the protocol, and participants provided informed consent. Measures were collected via in-home interviews in English or Spanish. For this study, we used data from Time 1 (median: 7 weeks postpartum, interquartile range: 4–12 weeks) and Time 2 (median: 34 weeks postpartum, interquartile range: 29–39 weeks) visits. This sample included women with complete PTSD data ($N = 1663$).

Measures

Trauma exposure. Past-year trauma exposure was assessed at Time 1 ($n = 1590$). Women reported events that occurred to them or close others over the past year on a Life Events Checklist (Dominguez et al., 2005; Dunkel Schetter et al., 2013). Consistent with *DSM-IV-TR's* definition of a Criterion A trauma (e.g., experienced, witnessed, or confronted with an event involving actual or threatened death, serious injury, or threat to physical integrity of self/others; APA, 2000), we identified eight potentially traumatic events: serious injury/illness, hospitalization; mugging/assault; death; vehicular accident; threat of physical harm by another individual; robbery/burglary; natural disaster; crime victim. Additionally, past-year exposure to domestic violence was assessed using a modified HITS scale (Sherin et al., 1998), which was dichotomized to indicate presence/absence of violence (e.g., O'Campo et al., 2010). We summed the number of trauma types across these measures to calculate a past-year trauma burden.

PTSD symptoms. The PTSD Checklist-Civilian Version (PCL-C; Weathers et al., 1993) was administered at Time 2. Women reported on the frequency with which they were bothered by the 17 *DSM-IV-TR* PTSD symptoms in the past month (1 = not at all, 5 = extremely), with responses summed for a total PTSD symptom severity score. The PCL has strong psychometric properties (Wilkins et al., 2011) and has been used to assess PTSD in perinatal samples (Gelaye et al., 2017; Levey et al., 2018; Reichenheim et al., 2018). Based on research validating the fit of the five-factor dysphoric arousal in this sample (Thomas et al., under review), we summed the items for the five symptom dimensions; higher scores indicated greater symptom severity.

Sociodemographics. Women reported on their racial and ethnic identities at enrollment and were characterized into three groups: Latina, Black, and non-Hispanic White. To further characterize our sample, we present data on age, education, poverty, nativity, language preference, and study site.

Analytic plan

Chi-square (χ^2) and one-way analysis of variance (ANOVA) tests in SPSS Version 26 (IBM Corp. Released, 2019) were used to compare Latina, Black, and White women on sociodemographic, trauma exposure, and PTSD variables. Using multivariate analysis of covariance (MANCOVA) and one-way analysis of covariance (ANCOVA), we ran adjusted analyses accounting for sociodemographic variables significantly associated with total PTSD symptoms (age, education, poverty).

Results

Participant characteristics are presented in Table 1. Overall, women were young ($M = 25.8$ years), though White women were significantly older than Latina and Black mothers. Most women were Black (54.2%) and high school graduates (42.3%), though there were differences in education across racial and ethnic groups; significantly more White women received postsecondary education. Over one-half (62.1%) of the sample lived in an urban area. Black women primarily resided in Baltimore, North Carolina, and Washington, DC, Latinas mostly lived in Chicago and Los Angeles, and most White women in this sample resided in Chicago. With respect to income, nearly 60% of women were less than

Table 1
Participant characteristics for the full sample and by racial and ethnic group.

	Full Sample (N = 1663)	Black (n = 901)	White (n = 389)	Latina (n = 373)		
	M (*SD*) or % (*n*)	*M* (*SD*) or % (*n*)	*M* (*SD*) or % (*n*)	*M* (*SD*) or % (*n*)	*F* or x^2	*P*-value
Age at study enrollment	25.8 (5.67)	24.2 (4.91)	29.6 (5.91)	25.5 (5.24)	145.07	<.001
Study site					648.26	<.001
Baltimore	23.0 (382)	34.7 (313)	17.7 (69)	0.0 (0)		
Chicago	25.5 (424)	7.2 (65)	41.6 (162)	52.8 (197)		
Los Angeles	11.7 (194)	6.4 (58)	10.5 (41)	25.5 (95)		
North Carolina	20.0 (332)	25.2 (227)	26.0 (101)	1.1 (4)		
WADC	19.9 (33)	26.4 (238)	4.1 (16)	20.6 (77)		
Education					447.86	<.001
< HS graduate	18.0 (300)	16.1 (145)	5.9 (23)	35.4 (132)		
HS graduate	42.3 (703)	49.2 (443)	25.2 (98)	43.4 (162)		
Some college	23.4 (389)	27.2 (245)	23.9 (93)	13.7 (51)		
College graduate or more	15.3 (255)	6.8 (51)	44.7 (174)	5.4 (20)		
Other/no information	1.0 (16)	0.8 (7)	0.3 (1)	2.1 (8)		
Poverty					305.01	<.001
≤ 100% FPL	43.2 (719)	53.6 (483)	21.9 (85)	40.5 (151)		
100–200% FPL	26.8 (446)	24.1 (217)	16.2 (63)	44.5 (166)		
>200% FPL	29.9 (498)	22.3 (201)	62.0 (241)	15.0 (56)		
Nativity					883.66	<.001
US born	80.3 (1336)	97.6 (877)	92.3 (359)	26.8 (100)		
Foreign born	19.5 (325)	2.4 (22)	7.7 (30)	73.2 (232)		
Language preference						
English	86.2 (1434)			38.6 (144)		<.001
Spanish	13.8 (229)			61.4 (229)		
Past-year trauma count	1.22 (1.15)	1.30 (1.21)	1.17 (1.10)	1.10 (1.02)	4.09	.017

FPL = federal poverty line; HS = high school; SD = standard deviation; WADC=Washington, DC.

100% of the federal poverty line; Black women were over-represented in this group, whereas White women were more likely to be greater than 200% of the federal poverty line. Nearly three-quarters (73.2%) of Latinas were foreign-born, and over one-half (61.4%) preferred Spanish to English. Nearly 70% of women endorsed past-year trauma. Black mothers reported experiencing significantly more trauma types than did Latinas.

Severity of total PTSD symptoms and the five symptom dimensions are summarized in Table 2. In unadjusted analyses, Black women demonstrated the greatest PTSD symptom severity overall, and women of color exhibited more severe PTSD symptom levels across the re-experiencing, avoidance, numbing, and anxious arousal dimensions. In models adjusted for age, education, and poverty, there was trend-level significance for total PTSD symptoms, with Black women having slightly higher symptoms than Latina mothers. Racial and ethnic

Table 2
Adjusted and unadjusted total PTSD symptoms and symptom scores of the five dimensions across racial and ethnic groups.

				Between-Subjects for Adjusted Models			Black (n = 901)		White (n = 389)		Latina (n = 373)	
	Cronbach's α	Possible range	Observed range	*F* (2, 1653)	*P*-value	Partial η2	Unadjusted *M* (*SE*)	Adjusted *M* (*SE*)	Unadjusted *M* (*SE*)	Adjusted *M* (*SE*)	Unadjusted *M* (*SE*)	Adjusted *M* (*SE*)
Total PTSD symptoms[a,b,d]	0.91	17–85	17–80	2.85	**0.06**	.003	27.40 (0.37)	26.85 (0.34)	25.01 (0.42)	26.84 (0.56)	25.94 (0.47)	25.37 (0.54)
Re-experiencing[a,b,e]	0.84	5–25	5–25	3.83	**0.02**	.005	8.18 (0.13)	7.98 (0.12)	7.12 (0.15)	7.76 (0.20)	7.56 (0.17)	7.37 (0.19)
Avoidance[a,b,c,f]	0.73	2–10	2–10	9.91	< **.001**	.012	3.50 (0.07)	3.42 (0.60)	2.83 (0.07)	3.12 (0.10)	3.02 (0.08)	2.94 (0.10)
Numbing[a,c]	0.78	5–25	5–23	0.71	0.49	.001	7.39 (0.11)	7.25 (0.10)	6.62 (0.13)	7.07 (0.17)	7.20 (0.15)	7.06 (0.16)
Dysphoric arousal[a,c,f,g]	0.75	3–15	3–15	12.88	< **.001**	.015	4.90 (0.09)	4.84 (0.08)	5.42 (0.12)	5.60 (0.14)	4.72 (0.11)	4.69 (0.13)
Anxious arousal[a,c]	0.49	2–10	2–10	0.17	0.85	.000	3.43 (0.06)	3.36 (0.06)	3.01 (0.07)	3.29 (0.10)	3.44 (0.08)	3.32 (0.09)

Note: Adjusted for age, education, and poverty.
[a] Unadjusted significant difference between Black and White at $p < .05$.
[b] Unadjusted significant difference between Black and Latina at $p < .05$.
[c] Unadjusted significant difference between Latina and White at $p < .05$.
[d] Trend toward significant difference in adjusted analyses between Black and Latina, $p < .10$.
[e] Adjusted significant difference between Black and Latina at $p < .05$.
[f] Adjusted significant difference between Black and White at $p < .05$.
[g] Adjusted significant difference between Latina and White at $p < .05$.

differences in PTSD dimensions remained significant in adjusted models for re-experiencing, avoidance, and dysphoric arousal, but not for numbing and anxious arousal. Black women exhibited significantly more severe avoidance symptoms than White and Latina mothers and significantly more re-experiencing symptoms than Latinas. White women reported significantly greater symptoms of dysphoric arousal than did Latina or Black mothers in unadjusted and adjusted models.

Discussion

Adopting a dimensional approach to examining disparities in PTSD symptoms may further understanding of risk factors and treatment targets during the postpartum period. We present the first study to examine the symptom dimensions of the dysphoric arousal model among a low-income, racially and ethnically diverse perinatal population. In this sample of Latina, Black, and White postpartum women, PTSD symptoms were racially and ethnically patterned, and more nuanced findings emerged when considering symptom dimensions. Black mothers were particularly afflicted, exhibiting elevated re-experiencing and avoidance symptoms. Both Black and Latina mothers also reported significantly greater symptom severity across the numbing and anxious arousal dimensions relative to White mothers, though these differences dissipated when accounting for age, education, and poverty. White mothers reported significantly higher dysphoric arousal symptom levels than Black and Latina mothers.

Our findings build upon a small, but growing, literature examining racial and ethnic differences in PTSD symptom dimensions. Most prior research examined dimensions of the emotional numbing model among veterans (Coleman et al., 2019; Koo et al., 2016) or compared two racial and ethnic groups (e.g., Hispanic and non-Hispanic White as in Arbona et al., 2019; for exception, see Koo et al., 2016). We extend the evidence base by examining differences in a large, community-based sample of postpartum women inclusive of the three largest racial and ethnic groups in the United States. Consistent with other research (Coleman et al., 2019; Koo et al., 2016), we observed significantly elevated symptoms among women of color—particularly Black women—on some, but not all, PTSD dimensions. Importantly, when analyses adjusted for sociodemographic covariates, significant differences in the numbing and anxious arousal dimensions dissipated, and symptom severity was comparable between White women and women of color. Indicators of socioeconomic status, educational attainment, and poverty are complexly linked with race and ethnicity, and societal stratification along socioeconomic and racial and ethnic lines may influence manifestations of posttraumatic stress. Further, although the overall variance accounted for in our models was small, racial and ethnic differences in the re-experiencing, avoidance, and dysphoric arousal dimensions persisted even when accounting for covariates. These patterns highlight the nuanced interplay of sociodemographic factors with PTSD symptom dimensions and support a greater focus on contextual factors more broadly when considering posttraumatic psychopathology.

Focusing on PTSD dimensions allowed us to identify differences undetected by a total symptom count and may maximize ecological validity in the study of disparities in posttraumatic stress. Due to historical and ongoing experiences of racism and systemic oppression in the United States—and resultant vigilance for race-based threats in daily life—members of marginalized communities may be more likely to endorse the fear-based symptoms characteristic of the re-experiencing and avoidance dimensions. Although women of color in our sample reported more severe symptoms on these dimensions, White mothers reported more dysphoric arousal symptoms. Dysphoric arousal symptoms—including irritability and agitation—may be more culturally acceptable for White women to express than women of color, given pervasive stereotypes portraying racial and ethnic minority women as "angry" (Donovan, 2011).

Our study has limitations. First, as CCHN was conducted before the *DSM-5* revision, we examined *DSM-IV* PTSD symptoms. Although research suggests that the dysphoric arousal model well-characterizes *DSM-5* PTSD symptoms (Gentes et al., 2014), future research on disparities in posttraumatic stress should consider *DSM-5* PTSD and its more nuanced dimensional models (e.g., Armour et al., 2015). Second, CCHN was not designed to focus on trauma and PTSD. It did not comprehensively assess lifetime trauma exposure and, as in previous research (e.g., Edmondson et al., 2018), PTSD symptoms were not anchored to a particular trauma. Using available data, we estimated past-year exposure to several traumatic events and notably found rates similar to lifetime estimates in epidemiological samples (Benjet et al., 2016). However, given measurement limitations, we were not able to disentangle exposures occurring during the perinatal period from those occurring prior to pregnancy. Future research that examines how trauma and related psychopathology manifest prior to and during the perinatal period is needed. Third, we acknowledge that our categorization of mothers as Latina, Black, or White may mask important differences within these racial and ethnic groups. We join other scholars (e.g., Alcántara et al., 2013; Asnaani and Hall-Clark, 2017; Hall-Clark et al., 2016) in the call for moving beyond these categorizations and including assessments of cultural factors (e.g., stigma, racism, acculturation) in studies of disparities in posttraumatic psychopathology. Further, there is a long history of medical experimentation on and abuse of Black and Latinx populations in the United States (Washington, 2006), particularly regarding sexual and reproductive health (Prather et al., 2018), and future research should examine the ways in which historically linked contextual and sociopolitical factors influence individual-level manifestations of posttraumatic stress.

The perinatal period is a window of opportunity for intervention, as many women are engaged in the healthcare system for prenatal care. Our findings of racial and ethnic disparities across the PTSD symptom dimensions of the dysphoric arousal model in a large, diverse sample of postpartum women may have implications for healthcare of perinatal women. Implementing screening for PTSD symptom dimensions in this context may hold unique leverage in the identification of posttraumatic symptoms and aid in selecting interventions. Furthermore, the high past-year trauma exposure rates in our sample support the need for screening for trauma and its sequelae, particularly in perinatal care. Additional research is needed to identify mechanisms and intervention targets, particularly those that may result in improved delivery of culturally-competent care for posttraumatic psychopathology.

Contributors

JLT and JAS designed the present study. JLT performed the statistical analysis and wrote the first draft of the manuscript, with substantial input from JAS and SEC. As a CCHN Principal Investigator, CDS advised on methodology and content. All authors contributed to and gave approval for the final version of the manuscript.

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