Maternal Adverse Childhood Experiences and Perinatal Anxiety, Obsessive Compulsive Disorder, Posttraumatic Stress Disorder, and Substance Use

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ABSTRACT

Introduction: Postpartum mental health conditions including depression are a leading cause of maternal morbidity and mortality. Maternal adverse childhood experiences (ACE) have a dose-response predictive relationship to postpartum depression, highlighting mothers' own early relational trauma as an important risk factor for both mother and infant's postpartum course. Currently, far less is understood about whether maternal ACEs create risk for other postpartum mental health conditions that can negatively impact mother and baby.

Objective: This study sought to understand the relationship between maternal ACEs and the risk for development of perinatal anxiety, obsessive compulsive disorder, posttraumatic stress disorder, and substance abuse disorder via narrative review of published literature.

Methods: PubMed, PsycINFO, and Google Scholar databases were searched with terms: adverse childhood experiences or ACEs; perinatal or prenatal or pregnancy or postpartum; and either anxiety, obsessive compulsive disorder, posttraumatic stress disorder, or substance use disorder.

Results: Maternal ACEs increase risk for anxiety and posttraumatic stress disorder in pregnancy and postpartum. No studies were identified for obsessive compulsive disorder. Maternal ACEs increase the risk for substance use in pregnancy but are understudied postpartum despite risk for maternal overdose and mortality.

Conclusions: ACEs – especially those involving child maltreatment – are predictive of a wide range of perinatal mental health concerns, including anxiety, posttraumatic stress disorder, and substance use. Findings of this study support recommendations for inclusion of ACEs screening with perinatal patient populations as a component of trauma-informed care to contextualize and identify mothers who may have increased postpartum mental health risk and support needs.

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INTRODUCTION

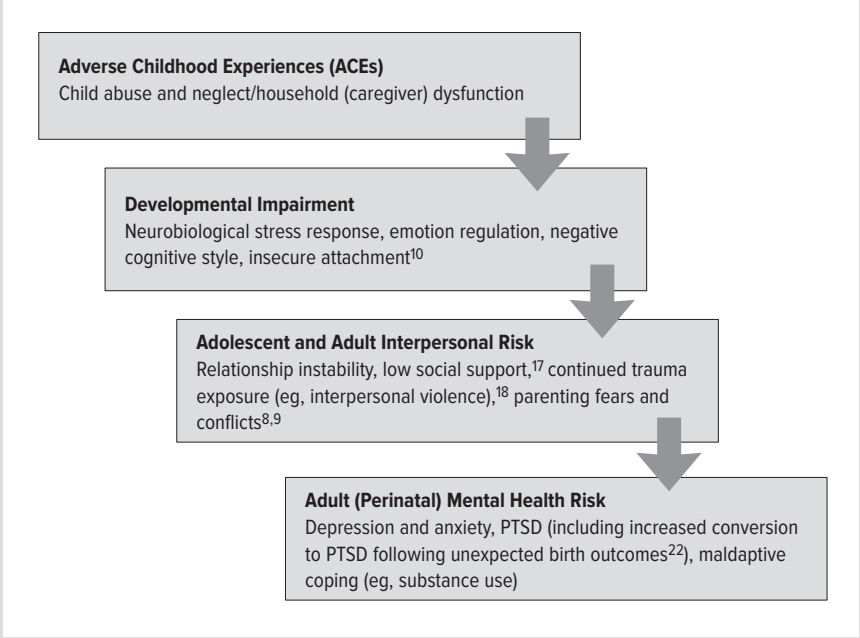
Mental health conditions are a leading contributor to alarming rates of US maternal morbidity and mortality in the postpartum period,[1,2] yet they remain a largely underrecognized and under-addressed postpartum complication. They are also a source of substantial health disparity,[3] with mothers from underrepresented racial backgrounds much more likely to experience postpartum depression relative to their White counterparts.[4] Clinical research has long focused on depression in the postpartum period, but there is growing awareness of the need to also attend to other mental health conditions, including anxiety, obsessive compulsive disorder (OCD), posttraumatic stress disorder (PTSD), and substance use disorders, which can have a debilitating impact on maternal distress and health, the developing maternal-infant relationship, and/or infant developmental trajectory.[5-7]

Postpartum mental health is complex and multidetermined. Understanding the role of mothers' early relational trauma during the transition to parenthood, when painful memories involving a lack of safety in childhood may be activated,[8,9] can provide timely opportunities for clinicians to increase awareness of heightened mental health risk and support needs for new parents.[10] Doing so may be especially important in working with expectant and new parents from historically underrepresented and/or oppressed communities coping with higher levels of stress and trauma exposure over the life course.[11]

Adverse childhood experiences (ACEs), most often measured

in health care environments via the ACE Questionnaire,[12] include adult-reported events that occurred before age 18 years along 2 dimensions: (1) child maltreatment, which includes history of child abuse (physical, emotional, or sexual) and/or neglect, and (2) household dysfunction, which captures negative effects on caregiver availability or stability via events such as substance involvement, mental illness, domestic violence, and incarceration. ACEs represent early relational stress and trauma yet are associated with a range of physical and mental health outcomes in adulthood,[12-14] including adverse birth outcomes such as pregnancy loss, preterm birth, and low birth weight.[15] A recent systematic review and meta-analysis summarized the ACEs literature with respect to postpartum depression.[16] Total maternal ACEs were identified as a significant risk factor for postpartum depression, with child maltreatment items showing the strongest associations (eg, emotional neglect, odds ratio [OR] = 2.95; 95% CI, 2.08-4.20).

Figure. Summary of Pathways Under Study: From Adverse Childhood Experiences (ACE) to Adult Mental Health Disorder



Abbreviation: PTSD, posttraumatic stress disorder

Multiple pathways likely explain the relationship between childhood relational trauma and adult mental health. As illustrated in the Figure, developmental effects of ACEs currently under study include impaired neurobiological stress response processes, emotion regulation deficits, negative cognitive style, and insecure attachment,[10] which in turn create vulnerability for interpersonal relationship challenges, low social support, and exposure to additional stressful and traumatic events into adulthood (eg, interpersonal violence).[17,18] These factors generally are associated with poorer adult mental health, and the perinatal period additionally represents a time of increased mental health vulnerability given increased physical and emotional demands.[19]

This review expands our knowledge base of the predictive value of maternal ACEs to the development of mental health conditions other than depression that significantly impact the experience of mothers and infants in the postpartum period. These include anxiety, OCD, PTSD, and substance use disorder. Because the perinatal literature is skewed toward prenatal health and risks over study of the postpartum period, studies conducted during pregnancy also are included, considering the risk symptoms in pregnancy may confer to the postpartum trajectory[20] yet be reported separately.

METHODS

PubMed, PsycINFO, and Google Scholar were each searched as follows: [Adverse Childhood Experiences or ACEs] AND [perinatal or prenatal or pregnancy or postpartum] AND [Anxiety]. The search was repeated replacing the last field with: [obsessive compulsive disorder or OCD], then [post-traumatic stress disorder or PTSD]; and finally [substance use or substance abuse or substance abuse disorder or SUDS]. No cutoff year was specified as it was anticipated that studies including these perinatal mental health conditions would be relatively contemporary. Published peer-reviewed articles in English were retained that reported relations between maternal ACEs and anxiety, OCD, PTSD, or substance use symptoms or diagnosis and included the following: a sample of majority adult birthing people assessed during the prenatal or postpartum year (up to 12 months); a measure of adverse childhood experiences (eg, ACE Questionnaire,[11] Childhood Trauma Questionnaire[21]); and a measure of anxiety, OCD, PTSD, or substance use/abuse symptoms or diagnosis and that did not exclude participants for current psychiatric diagnosis or treatment. Each identified article (and supplementary tables when applicable) was reviewed to determine appropriateness for inclusion (versus title and abstract alone).

RESULTS

As summarized in Table 1 (Postpartum) and Table 2 (Pregnancy), a total of 50 studies that met review criteria were identified. Consistent with the larger perinatal literature, there were substantially more studies conducted with women in pregnancy versus postpartum – especially for substance use. The majority were published in the past 5 years, although where data collection timing could be ascertained, data were typically collected prior to the

COVID-19 pandemic. Most studies were conducted in the US or with other large samples from Canada and western Europe. Studies from other nations and/or diverse sampling practices within the US are highlighted below.

Table 1. Maternal Adverse Childhood Experiences and Mental Health: Postpartum

Study	Country (Setting)	Sample N (Majority)	ACE Measure	Symptom Measure	Key Findings
Anxiety					
Williams, et al 2023[23]	US (NICU)	119 (Black, low income)	ACE-Q	GAD-2	ACES/anxiety (r = .38[a])
Zak-Hunter, et al, 2023[24,c]	US (outpatient)	123 (racially diverse)	ACE-Q	GAD-7	PPD of anxiety for each ACE .04[b]
Erickson, et al 2021[25]	US (psychiatric)	159 (White, high education)	ACE-Q	GAD-7	ACES/anxiety (r = .17[a]-.21[a])
Bilginer, et al 2020[26]	Turkey (outpatient)	31 (literate)	CTQ	BAI	ACEs/anxiety (r = .35[b])
Letourneau et al, 2019[27,c]	US (community)	907 (White, high income)	ACE-Q	SCL-90	ACEs/anxiety (r = .10[a]- .20[a])
McDonald, et al, 2018[28]	Canada (outpatient)	1994 (White, high education)	ACE-Q	SAI	> State anxiety when 3+ ACEs
Menke, et al, 2019[29]	US (outpatient)	328 (White, high education)	ACE-Q	GAD-7	ME ACEs on anxiety (b = 28[b]) if intact sleep
Oosterman et al, 2019[30,c]	Netherlands (social risk)	193 (White, high education)	ACE-Q	STAI	>Trait anxiety if high ACEs (t = -2.2[b])
Agrati, et al 2018[31,c]	Canada (community)	159 (White)	CTQ	STAI	ACEs/elevated anxiety trajectory
PTSD					
Brenner, et al, 2024[45]	Israel (hospital)	440 (Jewish, high education)	CTQ, CM items	PCL-5	ACEs/PTSD (r = .18[b]-.33[b])
Williams, et al, 2023,[23]	US (NICU)	119 (Black, low income)	ACE-Q	IES-R	ACEs/PTSD (r = .43[b])
Grasso, et al, 2020,[46]	US (outpatient)	114 (Latina, low income)	CTQ	STRESS-A	Threat ACEs/PTSD (r = .29[b])
Menke, et al, 2019[29]	US (outpatient)	328 (White, high education)	ACE-Q	IES-R	ME ACEs/PTSD if sleep poor (b = 9.49[b])
Metzler-Brody, et al, 2018[47]	Denmark (Registry)	129 439 (Dane population)	Public records	ASD diagnosis	3+ ACEs → ASD, (HR = 1.51)
Oh, et al, 2016[48]	US (community)	177 (White, high education)	CTQ	PTCI	ACEs/PTSD (r = .27[a])[d]
Substance Use					
Stewart, et al, 2023[49]	US (PRAMS)	920 (White, SES diverse)	ACE, HD items	Any vs poly use	ACEs → use (APR = 2.1-5.5)
Zak-Hunter, et al, 2023[24,c]	US (outpatient)	23 (racially diverse)	ACE-Q	Project EAT urvey	No ME ACEs on use (b = .03)

[a]$P < .05$, [b]$P < .01$.

[c]Mix of some women in pregnancy with postpartum sample.

[d]Significance above and beyond set of control variables.

r = correlation coefficient.

Abbreviations/Key: NICU, neonatal intensive care unit; ACE-Q, ACEs questionnaire; GAD-2, Generalized Anxiety Disorder questionnaire, 2 item; GAD-7, GAD questionnaire, 7 item; PPD, predicted probability difference; CTQ, Childhood Trauma Questionnaire; CM, CM, child maltreatment; BAI, Beck Anxiety Inventory; ME, main effect in regression analyses, controlling for other variables; SCL-90, Symptom Checklist 90, anxiety items; STAI, State Trait Anxiety Inventory; PRAQ-R, Pregnancy Related Anxiety Questionnaire, revised; PCL-5, posttraumatic stress disorder checklist for DSM-V; IES-R, Impact of Events Scale revised; ASD, acute stress disorder; HR, hazard ratio; STRESS-A, Structured Trauma Related Experiences and Symptom Screener for Adults; PTCI, Post Traumatic Cognitions Inventory; PRAMS, Pregnancy Risk Assessment Monitoring System; SES, socioeconomic status; APR, adjusted rrevalence ratio.

Anxiety Disorder

Postpartum: All 9 studies (N = 4013) described in Table 1 that assessed maternal ACEs and anxiety in the postpartum period reported significant associations between total number of ACEs and mothers' report of anxiety symptoms.[23-31] Types of symptoms assessed included those of generalized anxiety disorder,[23-25,29] general cognitive and physiological anxiety,[26,27] current anxious mood, and more stable anxious traits.[28,30,31] Where data were reported that allowed for estimation of effect size, the magnitude of correlations ranged from small (r's = .10-.29)[25,27,29] to medium (r's = .35-.38).[23,26] Of note is that the first 2 studies described in Table 1 found the ACEs-anxiety association remained significant after controlling for sociodemographic variables, community violence exposure,[24] co-occurring depression, peripartum trauma, and associated distress.[23] For example, a study that sampled specifically for racial and ethnic diversity reported that per linear regression modeling, the predicted probability difference of moderate or severe parental anxiety increased 4.4 percentage points for an increase in 1 ACE (95% CI, 0.01–0.08; $P < 0.05$).[24]

Postpartum studies are just beginning to explore ACE thresholds, with 2 finding higher (eg, >3) maternal ACEs confers substantially increased risk for the development of anxiety.[28,30] An additional study beyond the parameters of this review that combined ACE profiles across expectant couples also is striking in that they identified a large increase in risk for maternal postpartum anxiety when mothers and their partners both had 4 or more ACEs coming into the transition to parenthood.[32]

Pregnancy: As shown in Table 2, an additional 15 studies representing 13 independent data sets (N = 23 258) were identified that reported on the maternal ACEs-anxiety association in pregnancy. The types of anxiety assessed were broader than postpartum studies and included pregnancy-specific anxiety[33-37] and clinician-determined thresholds for clinical levels of anxiety severity[38] or DSM disorder,[39-41] in addition to more generalized symptom screening.

Significant associations between maternal ACEs and a range of anxiety types, including clinical disorders, were reported in 10 of the 13 datasets.[10,33,34,36-44] Several controlled for other key adult sociodemographic factors, stress, and mental health con-

Table 2. Maternal Adverse Childhood Experiences and Mental Health: Pregnancy

Study	Country	Sample n	ACE Measure	Symptom Measure	Effect Size
Anxiety					
Clark, et al, 2024[33]	US	292	ACE-Q	ASR/STAI/PSAS	NS to small
Watson, et al, 2024[39, a]	US	18 852	BRFSS	EMR diagnosis	Medium to large
Foti et al, 2023[40, a]	US	1084	BRFSS	EMR diagnosis	Medium to large
Young-Wolf, et al, 2019[41, a]	US	358	BRFSS	EMR diagnosis	Medium to large
Barclay, et al, 2023[50]	US	162	RFQ	OASIS	NS
Kaliush, et al, 2023[34]	US	152	TEBL-C	PSAS	Small
Ward, et al, 2023[38]	US	229	ACE-Q	HAM-A	CSA > clinical cutoff
Wohrer, et al, 2023[42]	US	202	ACE-Q	GAD-7	Small[b]
Osofsky, et al, 2021[10]	US	303	ACE-Q	GAD-2	Medium[b] to large
Racine, et al, 2021[43]	Canada	338	ACE-Q	GAD-2	Large 3+ACEs
Samia, et al, 2021[35]	Kenya	215	ACE-IQ	PRA	NS
Kotimaki, et al, 2020[44]	Finland	2763	TADS	STAI	Small[b]
Ozsahin, et al, 2020[36]	Turkey	536	ACS-Q	PRAQ-R2	Medium
Menke, et al, 2019[29]	US	250	ACS-Q	GAD-7	NS
Fredricksen, et al, 2017[37]	Norway	1036	ACE-Q	PRAQ-R	Small
Posttraumatic Stress Disorder					
Clark, et al, 2024[33]	US	292	ACE-Q	PCL-5	Medium
Carney, et al, 2023[51]	US	137	ACE-Q	PCL-5	Small[b]
Mackle, et al, 2023[52]	Australia	262	ACE-Q	PSS-I-5	Medium[b]
Wohrer, et al, 2023[42]	US	202	ACE-Q	PCL-5	Small[b]
Osofsky, et al, 2021[10]	US	303	ACE-Q	PCL-C	Large[b]
Goldstein, et al, 2020[53]	US	225	CTQ-SF	Stress-A	Large for CM ACEs
Atzl, et al, 2019[54]	US	101	ACE-Q	PCL-5	Medium[b]
Menke, et al, 2019[29]	US	250	ACE-Q	IES-R	Medium[b]
Isosävi, et al, 2018[55]	Gaza	511	TPO	HTQ	Small CM ACEs
Substance Use/Abuse					
Clark, et al, 2023[33]	US	292	ACE-Q	SIP-2R	Small to medium
Duka, et al, 2023[56]	US	218	ACE-Q	4 Ps Plus, UA	4+ ACEs large
Foti, et al, 2023[40]	US	1084	BRFSS	Intake, UA	3+ACEs medium
Racine, et al, 2020,[57] 2021[58]	Canada	1994	ACE-Q	Multiple yes/no	Small to medium[b]
Racine, et al, 2021[43]	Canada	338	ACE-Q	Multiple yes/no	Small to large[b]
Currie, et al, 2020,[59] 2021,[60]	Canada	1600, 1663	ACE-Q	Multiple yes/no	Small to large[b]
Testa, et al, 2022,[61] 2023[62]	US	5399	ACE-Q	Multiple yes/no	3+ ACEs medium[b]
Thomas, et al, 2023[63]	US	2483	BRFSS	Cannabis yes/no	3, 4+ ACEs large[b]
Crouch, et al, 2022[64]	US	617	PACE	Cannabis yes/no	3+ ACEs medium
Hemady, et al, 2022[65]	Multi	1189	ACE-IQ	ASSIST	Hi ACEs NS, small[b]
Klasner, et al, 2022[66]	US	256	ACE-17	Cannabis, UA	Medium[b]
Kors, et al, 2022[67]	US	93	MACE	UA	Small for sex abuse
Jasthi, et al, 2022[68]	US	192	ACE-Q	Chart extraction	4+ ACEs small
Osofsky, et al, 2021[10]	US	303	ACE-Q	ASSIST	Medium[b] for CM
Bhengu, et al, 2020[69]	S Africa	223	ACE-IQ	ASSIST	Small to medium[b]
Pear, et al, 2017[70]	US	2999	NLSYCYA	Tobacco yes/no	Small to medium[b]
Chung, et al, 2017[71]	US	1476	ACE-7	Multiple yes/no	3+ ACEs medium[b]
Smith, et al, 2016[72]	US	2303	ETI-SF	Multiple yes/no	Large for smoking
Frankenberg, et al, 2015[73]	US	1987	BRFSS	BRFSS	Medium to large[b]
Choi, et al, 2014[74]	S Africa	66	CTQ	AUDIT	Insufficient data

[a]Kaiser-Permanente data set.

[b]Significance above and beyond set of control variables.

Abbreviations/Key: ASR, Adult Self Report; STAI, State Trait Anxiety Inventory; PSAS, Pregnancy Stress and Anxiety Scale; NS, not significant; BRFSS, Behavioral Risk Factor Surveillance System Survey; EMR, electronic medical record; RFQ, Risky Families Questionnaire; OASIS, Overall Anxiety Severity & Impairment Scale; TEBL-C, Traumatic Experiences Endorsed Prior to Age 18 (adapted from several measures); HAM-A, Hamilton Anxiety Scale; CSA, childhood sexual abuse; GAD-7, Generalized Anxiety Disorder scale, 7 item; GAD-2, GAD scale, 2 item; ACE-IQ, ACE International Questionnaire; PRA, pregnancy-related anxiety; TADS, Trauma & Distress Scale (CM ACEs items only); PRAQ-R2, Pregnancy Related Anxiety Questionnaire, Revised 2; PSS-I-5 = Posttraumatic Stress Disorder (PTSD) Symptom Scale Interview; PCL-5 = PTSD checklist for DSM-V; PCL-C, abbreviated PTSD checklist, civilian version;CTQ-SF, Childhood Trauma Questionnaire, short form; STRESS-A, Structured Trauma Related Experiences and Symptom Screener for Adults; CM, child maltreatment; IES-R, Impact of Events Scale, revised; TPO, 13-item survey from Transcultural Psychological Organization; HTQ, Harvard Trauma Questionnaire; SIP-2R, Short Inventory of Problems, 2 Revised; UA, urine assay; PACE, Positive & Adverse (11 item) Childhood Experiences; ASSIST, Alcohol, Smoking & Substance Involvement Screening Test; MACE, Maltreatment and Abuse Chronology of Exposure; ACE 17, 17-item ACE Questionnaire; NLSYCYA, National Longitudinal Survey of Youth 1979 (3 extracted ACE items); ETI-SF, Early Trauma Inventory Self Report, Short Form; AUDIT, Alcohol Use Disorders Identification Test.

ditions.[10,41,43] Where effect sizes could be estimated, magnitude of associations were most often small (β; s = .09-.11; r's = .10-.29)[33,34,37,42,44] versus medium (adjusted OR = 2.57-4.7l; r's = .36).[10,36,39,40] Two studies reporting large effects specifically examined mothers with higher (3 to 4+) ACEs and other intrapersonal risk factors.[39,43] For example, in an analysis of over 18 000 electronic medical records for women receiving obstetric care in an integrated managed health care system, the relative odds of having a recorded anxiety disorder increased by 3.39 (95% CI, 2.87-4.00) for mothers with 4 or more ACEs relative to those with none. Relative risk was further increased by 5.05 (95% CI, 4.04-6.31) for those mothers who had high (>4) ACEs and were categorized as reporting low intrapersonal resilience.[39] Child maltreatment-specific ACEs also were identified in a racially and socioeconomically diverse sample as having a stronger association to anxiety symptoms than household dysfunction ACEs, controlling for other stress or psychiatric concerns (β = .14, SE = .06, $P < .02$).[10]

Posttraumatic Stress Disorder

Postpartum: All 6 postpartum-identified studies (N=130 167) in Table 1 reported a significant increase in risk for posttraumatic stress symptoms with the presence of maternal ACEs.[23,29,45-48] The magnitude of effect sizes across findings ranged from small (eg, r's = .18-29)[45,46,48] to medium (r's = .33-.43)[23,45] to large (β = 9.49),[29] the latter representing a higher risk subgroup of women also experiencing sleep insufficiency. Of significant note is a population-level cohort study from Denmark with an exceptionally large sample size (n = 129 539) drawn from national registry records to include ICD psychiatric diagnoses made after birth.[47] This study reports a persistent effect of maternal ACEs on risk of postpartum psychiatric episodes with a dose–response effect, including for clinical diagnosis of acute stress reaction, which can develop into PTSD with more time. Of the adverse childhood events available from public records, out-of-home place-

ment – likely a proxy for more severe child maltreatment and/or parent loss – carried the greatest risk for development of postpartum acute stress disorder (hazard ratio [HR] = 2.49; 95% CI, 1.54–4.03).

Pregnancy: All 9 studies (N = 2283) with women in pregnancy summarized in Table 2 also reported significant associations between maternal ACEs and PTSD symptoms.[10,29,33,42,51-55] Twice as many studies (6) reported medium to large effects (r's = .24-.56; β's = .32-.38)[10,29,33,51,52,54] versus 3 reporting small effect sizes (r's = .16-.24; β's = .14-.19)[42,51,55] and often above and beyond sociodemographic factors and current supports and stressors, including interpersonal violence and predelivery perinatal trauma.[10,29,52,54]

Stronger associations were again found when examining the predictive role of child maltreatment ACEs,[10,53,55] and large effects when considering the contribution of both child maltreatment ACEs and adult interpersonal violence together,[53] highlighting the importance of considering relational trauma across the lifespan. Stronger associations also were found for child maltreatment ACEs that occurred in early versus middle childhood or adolescence,[54] consistent with broader literature suggesting that early childhood represents a critical period for social emotional development.

Obsessive Compulsive Disorder

No studies were identified that examined ACEs-OCD links in the perinatal period. While OCD is believed to have strong neurobiological etiology, early environmental factors have been identified as important to disease severity.[75] Indeed, in the general adult mental health literature, ACEs predict increases in obsessive-compulsive symptom severity and impairment, with the strongest relationships for ACEs again specific to child maltreatment.[76,77]

It is conceivable that for the perinatal population, where intrusive thoughts and images related to harm befalling one's baby are common,[78] maternal ACEs involving a loss of felt safety and/or protection may be particularly salient to postpartum obsessive compulsive symptom content or expression. An Israeli validation study of the Maternal Disintegrative Response Scale (MDRS) for women with histories of early relational trauma and insecure attachment supports this notion.[79] Women in that study who endorsed any ACEs (>0) rated higher on the Intrusive Thoughts subscale (eg, item:"When I'm holding the baby, the uncontrollable thought that I'm going to drop him/her flits through my mind").

Substance Abuse

Postpartum: As shown in Table 1, only 2 studies (N = 2043) examining maternal ACEs and substance use postpartum were identified. One found no significant association between ACEs and tobacco, alcohol, or other drug use frequency in a racially diverse US sample, controlling for current stressors such as financial instability and community violence.[24] The other focused its analysis on Centers for Disease Control and Prevention (CDC)-led Pregnancy Risk Assessment Monitoring Systems (PRAMS) data from 7 US states with high opioid use.[49] Maternal ACEs were related to postpartum substance use and polysubstance use, with those reporting 2 to 4 ACEs being 2 to greater than 5 times as likely to use as those reporting no ACEs (adjusted prevalence ratio [APR] = 2.1, 95% CI, 1.5-2.7; APR = 5.5, 95% CI, 2.6- 11.4, respectively).

Pregnancy: Findings across 23 studies representing 19 independent datasets (N=25 668) summarized in Table 2 consistently reported significant associations between maternal ACEs and tobacco,[10,58,68-72] alcohol,[10,33,58,59,69,71,73,74] cannabis,[63,64,66] and other drug use[10,57,60,62,65,67,71] during pregnancy. Effect sizes ranged from small to large, at times by substance within the same dataset, and often controlling for a range of sociodemographic and other mental health symptoms and stress variables. A threshold of 3 to 4 or more maternal ACEs often was associated with larger effects.[10,40,56,62-64,68,71] While limited to only 3 studies, associations were smaller but significant in non-Western countries.[65,69,74] For example, data from the Evidence for Better Lives Study (EBLS), which includes longitudinal data from 8 low- to middle-income cities in underrepresented regions of the world, classified women into groups based on maltreatment severity. Mothers in the most severely maltreated group as children reported the most prenatal drug use.[65]

DISCUSSION

Maternal ACEs and Postpartum Mental Health

Mothers' self-report of adverse experiences during their own childhood have been identified previously as a risk factor for postpartum depression.[13] This review extends consideration to other mental health conditions important in the postpartum period for women and their infants. A small body of research has begun to emerge, especially over the past 5 years (albeit primarily reporting on pre-COVID-19 data), which identifies maternal ACEs as a risk factor for the development of postpartum anxiety and PTSD. The magnitude of associations suggest that the risk conferred from ACEs is generally stronger for symptoms of postpartum PTSD, which makes sense given evidence that trauma begets trauma. ACEs have been found to increase risk for adult interpersonal violence,[18] experiencing various peripartum medical events as traumatic,[23] and conversion to postpartum PTSD following unexpected birth outcomes (See Figure).[22] While the number of studies is small, data are emerging that, like with postpartum depression, ACEs specific to child maltreatment or experienced at higher levels (3 to 4+ ACEs) have the most predictive value with respect to risk for symptoms of postpartum anxiety and PTSD.

No studies have yet considered maternal ACEs in relation to OCD and very few for substance use in the postpartum year. The latter is an especially important focus for future study given the burgeoning opioid crisis in the United States. ACEs for perinatal mothers in treatment related to methamphetamine and/or opioid abuse are much higher than the general adult population (4 to 5

ACEs on average vs 1 ACE),[80,81] and overdose is now a leading cause of pregnancy-related death.[1,2] There are many more studies on substance use in pregnancy, including the role of maternal ACEs as a significant risk factor, which is understandable given the heightened concern for intrauterine transmission of licit and illicit substances to the developing fetus. However, recent data from the Wisconsin Maternal Morbidity and Mortality Board found that 50% of fatal overdose events occur in the second half of the postpartum year (6-12 months),[82] a time of sharp reduction in access and/or contact with clinicians (especially without Medicaid expansion to 12 months postpartum in Wisconsin).[83] Understanding risks and needs related to continued or increased substance use after pregnancy, when parental concern for transmission to fetal development is reduced, is an essential priority.[84]

ACEs and Prenatal Mental Health

Studies of maternal ACEs and mental health conditions of interest also were reviewed during pregnancy, as more exist and may inform our emerging understanding of the maternal ACEs/postpartum mental health continuum. Pregnancy studies paralleled the postpartum findings above, showing ACEs increases risk for symptoms of prenatal anxiety and PTSD—especially for women reporting high levels of ACEs (3 to 4+) and for child maltreatment ACEs. In general, pregnancy studies were more likely to include important control variables in their analyses, showing independent effects of maternal ACEs on perinatal mental health and substance abuse symptoms above and beyond the impact of sociodemographic factors or concurrent stress or trauma related to peripartum events or violence. Taken together, maternal ACEs are a consistent risk factor for a range of mental health conditions across the perinatal period.

Limitations

Limitations of this review include the relatively small number of studies that focus specifically on the postpartum versus pregnancy period. As this body of literature grows, summation via more rigorous methods including meta-analysis will be important to identify sources of heterogeneity across studies and confirm magnitude of effects, as well as variations related to types of maternal ACEs or symptom risk. Increased use of diagnostic tools to supplement symptom screeners also will clarify the threshold of maternal ACEs that confer risk for clinical diagnosis and functional impairment across conditions.

Most studies to date have been conducted in the US, Canada, and western European nations. While some have actively worked to sample at a population level or with intentionally diverse communities, data remain biased toward White mothers with higher levels of education and/or economic stability. Diversifying the ACEs-perinatal mental health body of literature is especially important given that membership in underrepresented ethnic and racial groups is more often associated with other key factors that impact mental health access (eg, socioeconomic status, immigration status) or risk (eg, racism),[11,85] creating additional levels of historical and familial vulnerability for expectant or new parents.

Implications for Policy and Practice

Calls for perinatal screening for a broader range of mental health concerns in addition to depression and trauma exposure are increasing.[10,86,87] The American College of Obstetrics and Gynecology (ACOG) offers recommendations and screening guidance that expands beyond depression for other postpartum mood, anxiety, and PTSD symptoms[88] and has advanced a policy priority emphasizing the need for collaborative, patient-centered, and ongoing communication between clinicians and mothers about substance use risk and needs.[89] Further, the ACOG Committee for Healthcare for Underserved Women recommends screening of past and current trauma as a key component of the provision of trauma-informed perinatal care environments.[90]

Trauma-informed perinatal care involves understanding the full range of potential effects that past and/or current trauma may have for women moving through pregnancy, birth, and the postpartum period. This includes recognizing signs of trauma response activation, such as in response to medical visit dynamics (eg, felt powerlessness), procedures, or physical sensations; responding to patients who have experienced trauma effectively to increase trust, collaboration, and maternal confidence; and resisting retraumatization, such as affirming womens' experiences of distress even when perinatal health or outcomes are considered successful.[86] To begin, clinicians must first be aware of patient trauma history.

Screening for early relational trauma using an instrument like the ACE Questionnaire[12] offers a first step toward identification of women who may need additional support to reduce trauma-related risks to their own perinatal experience, emerging parent/infant relationship, and infants' developmental course.[10,86,87] Considering that ACEs can increase feelings of interpersonal distrust and lead to lower levels of adult social support more broadly, compassionate, culturally sensitive ACEs screening conversations between clinicians and patients can serve to build trust and connection, while facilitating shared communication about important mental health risks and support needs in and outside the perinatal care environment.[91] For example, clinicians might wonder with mothers who report high (3 to 4+) ACEs about whether they feel that these difficult experiences from their own childhood are affecting how they think or feel about seeking medical care or becoming a parent themselves. Such conversations can lead to identification of sources of resiliency and fears or concerns, both of which may guide aspects of treatment planning or the identification of helpful resources and referrals.

Barriers to additional screening in health care environments certainly exist, including limits of clinician time.[87] Despite national recommendations above, screening practices for ACEs[92,93] and postpartum mental health symptoms[91] are reported to be low.

However, according to the most recently released (2018-2019) PRAMS data – the ongoing survey of new mothers conducted jointly by the CDC and state health departments – Wisconsin is screening 94% of women for depression either during prenatal or postpartum visits and 72% of women at both.[94] Despite this relative success, the addition of several other recommended perinatal mental health screening tools – for anxiety, PTSD, and substance use – represent a challenge. As summarized in this review, however, because the evidence is growing that ACEs predict a wide range of perinatal mental health conditions, the use of a screening tool to identify women with high (3 to 4+) ACEs during pregnancy may help to prioritize patients for whom increased outreach and mental health screening across the perinatal period – for conditions beyond depression – is most needed.

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