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Anxiety and Related Disorders During the Perinatal Period

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anxiety disorders, perinatal mental health, perinatal anxiety

Abstract

Anxiety and anxiety-related disorders are, as a group, the most common mental health conditions and are more common among women compared with among men. It is now evident that these disorders affect one in five pregnant and postpartum people and are more common than depression. For some disorders (e.g., obsessive–compulsive disorder), there is also evidence of an elevated risk for their development and exacerbation during perinatal periods. In this article, we review the literature pertaining to anxiety and anxiety-related disorders during the perinatal period. We also provide information related to pregnancy-specific anxiety and fear of childbirth constructs that exist outside of diagnostic classification but are particularly important in the perinatal context. We review the scope, prevalence, and etiology of these disorders as well as comorbidity, screening, assessment, and treatment. We conclude with an overview of some of the key gaps in knowledge and recommendations for future research.

Contents

1. OVERVIEW AND SCOPE

It is now well-understood that depression and psychosis are not the only mental health conditions that negatively affect parents during pregnancy and the postpartum period (Howard & Khalifeh 2020). During the perinatal period, anxiety and anxiety-related disorders (ADs) are more common than depression and are similarly distressing and impairing (Fawcett et al. 2019). The two most frequently employed diagnostic classification systems globally are the *International Classification of Diseases*, 11th Revision (ICD-11) (World Health Organ. 2019) and the *Diagnostic and Statistical Manual of Mental Disorders*, Fifth Edition (DSM-5) (Am. Psychiatr. Assoc. 2013). The AD categories included in the DSM-5 and ICD-11 are very similar.

For the purposes of this review, we define ADs as including all of the DSM-5/ICD-11 anxiety disorders as well as the following anxiety-related disorders: obsessive–compulsive disorder (OCD) and posttraumatic stress disorder (PTSD). For many years, both OCD and PTSD were classified as anxiety disorders (Am. Psychiatr. Assoc. 1994). In the DSM-5, these disorders were moved to their own sections (Am. Psychiatr. Assoc. 2013). Anxiety is a primary feature of OCD and PTSD, both of which are acknowledged to be highly relevant to perinatal people. Therefore, these conditions are included under the umbrella of related ADs during the perinatal period. Of note, separation anxiety disorder (SepAD) (previously listed under "Disorders Usually First

Diagnosed in Infancy, Childhood, or Adolescence") is now included among the DSM-5 anxiety disorders and no longer requires onset prior to age 18 (Am. Psychiatr. Assoc. 2013).

While feelings of anxiety across a wide range of intensity, from mild to severe, are considered a normal and healthy aspect of the human experience, they are nevertheless distinct from diagnosable ADs. For symptoms of anxiety to merit a diagnosis, they must result in clinically significant distress and/or impairment (Am. Psychiatr. Assoc. 2013). In the perinatal anxiety literature, a number of anxiety constructs [e.g., pregnancy-specific anxiety and fear of childbirth (FoB)] sit outside of current mental health disorder classifications (Bayrampour et al. 2016, Stoll et al. 2017). Consequently, a perinatal person's experience of pregnancy-specific anxiety or FoB may not always be accompanied by clinically significant distress or impairment. Due, however, to the particular relevance of pregnancy-specific anxiety and FoB for perinatal people, we include some discussion of each.

1.1. Prevalence

One-third of adults report symptoms that meet the criteria for one or more ADs at some point during their life, more than any other category of mental health disorder (Kessler et al. 2005a). The lifetime prevalence of ADs exceeds that of mood disorders (i.e., 21.4% for depressive and bipolar disorders) (Kessler et al. 2005a). Further, women are 1.5 times more likely to suffer from ADs compared with men, and therefore ADs are particularly relevant to mothers and other birthing persons (BPs) (Kessler et al. 2012, 2005b). In the most carefully conducted meta-analysis on the topic to date, the prevalence of ADs during the perinatal period was estimated to be 21% (Fawcett et al. 2019). For most ADs, prevalence estimates during the perinatal period are very similar to the 1-year prevalence estimates in the general population. Exceptions include the prevalence estimates for OCD, panic disorder (PD), and possibly anxiety disorder not otherwise specified (Fairbrother et al. 2024a, Guler et al. 2008).

1.2. Etiology

ADs are broadly defined by excessive fear, distress, and avoidant behaviors in response to perceived environmental or internal threats (Am. Psychiatr. Assoc. 2013, Fawcett et al. 2019). While associative learning processes are believed to be a fundamental mechanism, differences in the age of onset, the higher prevalence in women, and the fact that many people encounter fear-inducing situations without developing an AD indicate the significance of additional risk factors, such as genetic, hormonal, and social influences (Newman & Llera 2011).

1.2.1. Associative learning experiences. Associative learning includes classical conditioning, where a neutral stimulus (e.g., a visit to a prenatal class) is paired with a negative experience (e.g., group members hold intensely different views, and the individual feels judged and excluded), which leads to fear of the neutral stimulus. Other factors in associative learning involve individual differences in fear sensitivity and limited exposure to stimuli in neutral contexts due to restricted environmental contact (e.g., through controlling parenting), resulting in poor inhibition of fear learning (e.g., someone who has limited exposure to benign health visits followed by a distressing health experience is more likely to develop a fear of medical encounters than someone who has more regular exposure to health encounters) (Newman & Llera 2011). Additionally, fear generalization from one stimulus to another and poor fear extinction may be related to worry and rumination as well as avoidance behaviors. These processes are thought to contribute to the higher risk of ADs in women, who are more prone to ruminating and worrying, and in girls who experience restrictive and intrusive parenting (Nolen-Hoeksema & Aldao 2011). During the perinatal period, new experiences, significant transitions (e.g., from working full-time to maternity

leave), increased responsibilities for the baby (and the emotional impacts of those responsibilities), new environments, and previously feared but avoided situations (e.g., blood/injection phobia) may trigger the onset or exacerbation of an AD.

1.2.2. Biological/genetic factors. Differences in learning outcomes may also be linked to individual differences. Twin studies suggest that fear acquisition is 35–40% heritable (Hettema 2008). The serotonin transporter polymorphism 5-HTTLPR, which is associated with amygdala reactivity, may influence fear acquisition, while brain-derived neurotropic factor is crucial for neural plasticity in the hippocampus and may be linked to fear generalization. These may be moderated by epigenetic processes (Hettema 2008). Though research on the role of hormones in associative learning is limited, emerging evidence indicates that ovariectomized rats that receive estradiol show greater fear generalization compared with those that do not receive estradiol (Lynch et al. 2013). Furthermore, higher estradiol levels in humans have been associated with greater fear extinction. During the perinatal period, these findings suggest that while parents may be more prone to developing overgeneralized fears if exposed to traumatic or fearful stimuli, they may also respond well to exposure-based treatments that build on extinction learning. Conversely, rapidly decreasing estradiol levels immediately postpartum may reduce women's/BPs' sensitivity to exposure-based treatments.

1.2.3. Sociological contributions. Despite the importance of individual factors, higher rates of ADs in women relative to men implicate the role of broader sociological factors in shaping learning content. For example, women/BPs provide significantly more caregiving than nonbirthing partners and carry a higher proportion of household-related work/organization and unpaid volunteer and community work (Ervin et al. 2023, Ferrant et al. 2014). Rates of experiencing domestic violence and abuse (DVA), including physical abuse, sexual abuse, and coercive control, are also high in women/BPs; the global lifetime prevalence of experiencing DVA is 27% in ever-partnered women (Sardinha et al. 2022). Reported rates in the perinatal period are 3.7–9% (Hahn et al. 2018), and the prevalence of lifetime DVA experience in women/BPs with probable anxiety in the perinatal period has been estimated at about 28% (Howard et al. 2013). Women's/BPs' overrepresentation in economically insecure employment and unpaid labor and their exposure to violence and coercion further compound intraindividual factors associated with risk for anxiety, including perceptions of perceived burden, stress, high levels of uncertainty, and poor control (Tobón et al. 2024). Women/BPs with fewer economic resources, reduced ability to take time off work for medical appointments, poor transportation, and lack of access to nutritious food for themselves and their babies are also less likely to have regular access to perinatal and primary health care; as a result, they are at greater risk for negative childbirth and infant outcomes and consequently greater risk for anxiety (Benjamin et al. 2024). These attributions may be especially likely in women/BPs from ethnically diverse backgrounds, who have faced unchanging patterns of structural and social discrimination, including generationally compounded wealth disparities (up to eight times less than their White counterparts despite 2:1 income differences), poorer educational experiences, and housing insecurity (e.g., in the United States associated historically with redlining practices that have limited Black/African American individuals to poorer residential areas) (Paradies et al. 2015). High rates of both explicit and implicit discrimination by health care providers also continue to persist (Blair et al. 2013), contributing to reduced screening, access to treatment, and consequently, poorer mental health (Williams et al. 2017).

1.3. Impact of Perinatal Anxiety

Outside of the perinatal period, ADs are associated with significant impairment across various domains of functioning, including social, emotional, home life, occupational, and physical health

(Leon et al. 1995). Across countries and settings, people who suffer from one or more ADs make significantly greater use of health care services compared with people without these conditions (Horenstein & Heimberg 2020).

Among perinatal parents, both symptoms of anxiety (in particular when severe and persistent) and diagnosable ADs have been associated with a broad range of negative effects for the woman's/BP's mental health, pregnancy, birth, fetus, and developing infant (Langham et al. 2023, Quagliato et al. 2022). It is hypothesized that these effects are the result of both genetic inheritance and parenting behavior (McAdams et al. 2014, Quagliato et al. 2022). For example, anxiety during the perinatal period is associated with various obstetrical and birth-related consequences, including birth complications, preterm birth, and low birth weight (Hoyer et al. 2020). Among offspring, anxiety during the perinatal period is associated with difficult temperament, increased attention to hearing fear in the voices of others, impaired self-regulation, impaired cognitive and motor development, internalizing and externalizing symptoms, social difficulties, and symptoms of anxiety across development (Adamson et al. 2018, Korja et al. 2017, Quagliato et al. 2022). Anxiety specifically during the postpartum period has been associated with an increased risk of attention-deficit-related difficulties and one or more ADs in children (specifically, a sevenfold increase) (Quagliato et al. 2022). Even when prenatal depression is controlled for, maternal anxiety is a strong predictor of postpartum depression (Grigoriadis et al. 2019). There are also findings specific to diagnosable ADs in perinatal women/BPs. For example, ADs during the prenatal period have been associated with pregnancy complications, preterm birth, pregnancy loss, neonatal health problems, low birth weight, and behavioral and emotional problems in the child (Grigoriadis et al. 2018). They are also predictive of ADs and depression in offspring (Martini et al. 2010).

2. SCREENING

2.1. Rationale for Universal Screening

There are many compelling reasons to implement screening. First, women/BPs report positive feelings about screening initiatives (Austin & Highet 2017). Under specific conditions, screening can lead to improved mental health outcomes. Because standard diagnostic assessments for ADs are time-intensive and require a high level of training to administer, they are also very costly. Screening can reduce costs by limiting the number of people who require expensive diagnostic assessments by identifying those who truly need them. An additional rationale for screening is that women/BPs who are not questioned about their mental health are much less likely to seek help (Austin & Highet 2017). In the absence of screening, many women/BPs suffering from these conditions will not be identified as such and will therefore fail to receive appropriate treatment (Hart & Flynn 2016). Of note, several high-profile health care agencies have noted an urgent need for perinatal screening for ADs (e.g., the Society of Obstetricians and Gynaecologists of Canada, the American College of Obstetricians and Gynecologists, the UK National Institute for Health and Care Excellence).

Finally, the availability of effective, evidence-based interventions for ADs, most often cognitive behavioral therapy (CBT), also supports the potential benefits of screening. Studies comparing psychological interventions with pharmacological approaches have shown that for ADs, CBT is safe and is either equal or superior to medication (Lee & Stein 2023, Roshanaei-Moghaddam et al. 2011), and more recent evidence demonstrates the effectiveness of CBT among women/BPs suffering from ADs (Marchesi et al. 2016).

Despite the above, routine screening for these disorders is rare (Matthey 2016), largely due to insufficient recognition of the prevalence and impact of ADs that occur during the perinatal

period and a lack of evidence regarding the accuracy of existing screening tools and the impact of screening on mental health outcomes (Austin & Highet 2017, O'Connor et al. 2023).

2.2. Current Status of Perinatal Anxiety and Related Disorder Screening Tool Research

Numerous published reviews and individual studies have assessed the accuracy of screening tools for perinatally occurring ADs (Austin & Highet 2017, Natl. Inst. Health Care Excell. 2014, US Prev. Serv. Task Force 2023). Across these, several screening tools show promise. However, most published studies suffer from methodological flaws that are significant enough to prohibit the identification of any screening tool(s) of sufficient accuracy as meriting widespread use (Austin & Highet 2017, Fairbrother et al. 2024b, Norris & Wade 2017, US Prev. Serv. Task Force 2023). For example, across extant studies, there is significant variability in which and how many ADs are assessed and in which diagnostic criteria are employed. Further, several studies have reported insufficient screening metrics for conclusions to be drawn (Grigoriadis et al. 2011, Nath et al. 2018).

In our review of the literature, we were only able to identify one published study in which complete gold standard methodology for assessing the accuracy of screening tools was employed (Ayers et al. 2024) and a second study in which most of these methodological criteria were employed (Fairbrother et al. 2019). From these two studies, the Stirling Antenatal Anxiety Scale (SAAS) and a composite measure of 13 items met all criteria for a "good enough" screening tool; the Clinical Outcomes in Routine Evaluation (CORE-10) also performed well (Ayers et al. 2024, Fairbrother et al. 2019). Although these measures show promise, all three require replication to verify accuracy (Ayers et al. 2024, Fairbrother et al. 2019). These studies also provide evidence regarding the screening accuracy of two commonly employed tools: the Edinburgh Postnatal Depression Scale (EPDS) (along with its shorter three-item anxiety scale, the EPDS-3A) and the seven-item Generalized Anxiety Disorder–7 (GAD-7) (along with its shorter two-item version, the GAD-2). Despite their popularity, none of these tools (i.e., EPDS, EPDS-3A, GAD-7, GAD-2) performed at the level of a good-enough screening tool. The Whooley also did not perform well as a screening tool. They cannot be recommended for use. Of note, each of the higher-performing measures contained items reflective of symptoms from across a range of ADs. Details are shown in **Table 1**.

3. ASSESSMENT CONSIDERATIONS

Based on our experience conducting diagnostic interviews with pregnant and postpartum BPs, now across multiple studies, we are of the opinion that for some ADs, when perinatal-specific examples are absent from these interviews, perinatal people often fail to recognize their experience in the interview questions being asked. Thus, epidemiological studies of ADs during the perinatal period that fail to include perinatal-specific examples may underestimate disorder prevalence. For example, in assessments of specific phobias, perinatal people who experience clinically meaningful FoB are unlikely to mention it. In the context of typical phobias (e.g., blood, injury and injections, animals, insects, storms), perinatal people will rarely bring up FoB even if it is severe. This is also the case with OCD. Perinatal people typically do not recognize that their obsessions of harm related to their infant fit within the difficulties being asked about via standard OCD assessment questions.

4. INDIVIDUAL DISORDERS

In this section, we review the literature pertaining to individual ADs that may occur during the perinatal period. We provide evidence regarding perinatal prevalence and course, specific fear

Table 1 Table of screening tools as assessed by Ayers et al. (2024) and Fairbrother et al. (2019)

Ayers et al. 2024: unselected sample of pregnant people ($N = 403$) who completed the MINI for PD, Ag, specific phobia, SAD, GAD, PTSD, and OCD									
Measure	**Cut score**	**AUC (95% CI)**	**Sensitivity**	**Specificity**	**$\mathcal{J}$**	**LR+**	**LR−**	**NPV**	**Limitations and considerations**
GAD-2	≥2	0.77 (0.72–0.83)	70.9	76.2	0.47	2.97	0.38	0.91	Pregnant sample. This study provides support for the use of the CORE-10 and the SAAS but not the GAD-2, GAD-7, or Whooley. Participants tended to be highly educated, and a significant proportion reported mental health difficulties.
GAD-7	≥6	0.78 (0.72–0.84)	64.6	75.8	0.40	2.67	0.47	0.90	
CORE-10	≥9	0.82 (0.77–0.88)	69.6	79.0	0.49	3.31	0.38	0.91	
SAAS	≥9	0.81 (0.75–0.87)	83.5	72.8	0.56	3.07	0.23	0.95	
Whooley	≥1	0.70 (0.64–0.77)	58.8	75.5	0.34	2.4	0.55	0.88	
Fairbrother et al. 2019: unselected sample of postpartum people ($N = 310$) who completed the SCID for all of the anxiety disorders in the DSM-IV as well as PTSD and OCD									
Measure	**Cut score**	**AUC (95% CI)**	**Sensitivity**	**Specificity**	**$\mathcal{J}$**	**LR+**	**LR−**	**NPV**	**Limitations and conclusions**
GAD-2	≥2	0.75 (0.68–0.83)	0.56	0.82	0.38	3.03	0.54	0.90	Postpartum sample. Findings provide support for use of a composite measure that assessed elements of each AD. Use of other measures was not supported. Only participants who scored above cutoff on one or more screening tools were administered a diagnostic interview.
GAD-7	≥6	0.78 (0.70–0.86)	0.56	0.85	0.41	3.78	0.52	0.91	
EPDS	≥6	0.74 (0.66–0.82)	0.74	0.64	0.38	2.03	0.41	0.94	
EPDS-3A[a]	≥4	0.76 (0.68–0.84)	0.64	0.78	0.42	2.87	0.46	0.92	
Composite[b]	≥11	0.86 (0.81–0.91)	0.69	0.85	0.54	4.54	0.36	0.94	

Abbreviations: AD, anxiety-related disorder; Ag, agoraphobia; AUC, area under the curve; CI, confidence interval; CORE-10, Clinical Outcomes in Routine Evaluation (10 items); DSM-IV, *Diagnostic and Statistical Manual of Mental Disorders*, Fourth Edition; EPDS, Edinburgh Postnatal Depression Scale (10 items); GAD, generalized anxiety disorder; GAD-2, Generalized Anxiety Disorder–2 (two-item scale); GAD-7, Generalized Anxiety Disorder–7 (seven-item scale); LR, likelihood ratio; MINI, Mini International Neuropsychiatric Interview; NPV, negative predictive value; OCD, obsessive–compulsive disorder; PD, panic disorder; PTSD, posttraumatic stress disorder; SAAS, Stirling Antenatal Anxiety Scale; SAD, social anxiety disorder; SCID, Structured Clinical Interview; Whooley, Whooley questions.

[a]The EPDS-3A comprises three EPDS items deemed to reflect anxiety.

[b]The composite measure comprises 13 items taken from screening tools designed to assess symptoms of individual AD (includes 2+ items per AD).

content, comorbidity, screening, assessment, and treatment. Importantly, medication approaches to treatment are beyond the scope of this review. Consequently, we focus on psychological treatments only.

4.1. Generalized Anxiety Disorder

Excessive, uncontrollable worry across multiple domains (i.e., occupational, health, interpersonal) is the core symptom of generalized anxiety disorder (GAD). In the perinatal period, irritability (61.9%) and being easily fatigued (66.7%) are the most commonly endorsed symptoms of GAD; significant distress/impairment occurs less frequently (38%) (Dindo et al. 2017). Recent studies have shown that individuals with GAD are more prone to negative emotions than those without the disorder. When confronted with these powerful emotions, especially in uncertain situations, people who develop GAD may feel particularly vulnerable to future negative events. To cope with fears of adverse outcomes, some may develop beliefs that worry is useful in preparing for or preventing these negative outcomes and that it also shields them from disappointment if things do go poorly—a process that may reinforce a pattern of worry (Newman & Llera 2011).

4.1.1. Generalized anxiety disorder–related versus perinatal-specific worries. Meta-analyses and cross-national epidemiological studies highlight that the content of worries during the perinatal period both overlaps with that of general anxiety and is perinatally unique; the overlap ranges between 8% and 27% and is most likely to occur in the first trimester (Szekely et al. 2021). In later trimesters there is little shared variance between GAD-related and pregnancy-specific worries (Huizink et al. 2004). Overlapping worries include health of self, negative evaluations of self, social and interpersonal worries, health of others, and finances. Perinatal-specific content includes worries about fetal health and loss, parenting, health care during the perinatal period, newborn care, finances (e.g., insufficient money to care for one's child, housing expenses), and family and social support (Bayrampour et al. 2016). Behaviorally, though not part of the DSM-5 diagnostic criteria for GAD, parents describe seeking excessive reassurance (Green et al. 2021), compulsively "over"-checking the baby, parental overcontrol (e.g., reluctant separation, inflexible parenting), and overpreparation and avoidance of anxiety-producing topics and situations (Bayrampour et al. 2016). Pregnancy-related anxiety is more strongly related to negative childbirth and neonatal problems, infant cognitive and temperamental problems, and children's executive functioning and brain structure at 6–9 years (Buss et al. 2011, Huizink et al. 2003).

4.1.2. Prevalence and course. Across the lifespan GAD is highly prevalent, and its rates peak in the childbearing years. Prevalence estimates range from 1.3% to 3.8%, making GAD one of the most prevalent ADs during the perinatal period. These prevalence estimates are similar to those outside the perinatal period; diagnostic assessments indicate a lifetime prevalence of GAD between 4.3% and 6.2% and a 12-month prevalence of 2.9% for individuals aged 18–64. Notably, though, the course of GAD varies across the perinatal period. A large, community-based study ($N \approx 8{,}300$) found that 14.6% scored above threshold at 18 weeks' gestation, reducing to 8% postnatally; 2.4% had a de novo onset of GAD in pregnancy, potentially reflecting the confluence of highly relevant uncertainties during pregnancy (Anniverno et al. 2013). Without treatment, postpartum individuals meeting diagnostic criteria for GAD show high rates of stability up to 2 years after childbirth (Goodman et al. 2016).

4.1.3. Comorbidity. Up to 65% of individuals with GAD report comorbidity with other disorders. The most common comorbidities include depression, PD, and agoraphobia. Considering whether GAD is comorbid with depression is important for treatment planning as those with

comorbidity are less likely to achieve depression remission, and remission takes longer, with worries remaining even following remission (Bruce et al. 2005).

4.1.4. Screening and assessment. Numerous studies have assessed the psychometric properties and screening accuracy of self-report questionnaires for perinatally occurring GAD across different countries and cultures. Although there is evidence of good reliability and discriminant validity for the GAD-2, Antenatal Risk Questionnaire–2, and GAD-7 (Austin et al. 2022, Gong et al. 2022, Pierson et al. 2017), the GAD-2/GAD-7 perform less well as screening tools (Ayers et al. 2024). In one study, the GAD-2 demonstrated poor predictive validity (26%) against Structured Clinical Interview for DSM-IV (SCID-IV-R) diagnoses (Nath et al. 2018). In a second, more recent assessment of four measures of anxiety (GAD-2/GAD-7, Whooley questions, CORE-10, and SASS) against the Mini International Neuropsychiatric Interview (MINI) (Ayers et al. 2024), both the GAD-2 and GAD-7 performed poorly relative to the SASS and CORE-10 (note that the authors assessed tool accuracy with respect to any AD rather than GAD specifically). These findings highlight the need for further research examining the validity of screening and self-report measures of GAD. Further, studies assessing pregnancy-specific anxiety note that the poor overlap between GAD and perinatal-specific anxiety suggests that measures of GAD may underestimate perinatal-specific anxiety (Bayrampour et al. 2016).

4.1.5. Treatment. Despite the prevalence of GAD during the perinatal period, the specific perinatal nature of worries, and their impact on parental distress, functioning, and outcomes, there has been little research on the effectiveness of interventions for GAD during the perinatal period until recently. In this review, we focus on studies that recruited individuals (minimally with elevated perinatal-specific anxiety), randomized participants to conditions, and assessed anxiety postrandomization as a key clinical outcome. Six studies met these criteria. Five were CBT interventions adapted to address perinatal-specific worries; of these, two were group-based treatments (Green et al. 2020, O'Mahen et al. 2022), two were Internet-based CBT (iCBT) (Loughnan et al. 2019, Schwartz et al. 2023), and one was an individual, in-person schema-based CBT (Burger et al. 2020).

Between-group pre–post effect sizes for the iCBT and group interventions ranged from 0.40 to 0.66 at posttreatment, except in the individual, schema-based CBT intervention, which had small effect sizes. Those studies with longer-term follow-up demonstrated sustained gains. In the structural intervention, the Program in Support of Moms (PRISM) outperformed the Massachusetts Child Psychiatry Access Program (MCPAP) at 4–12 weeks postpartum on the GAD-7, though these differences were no longer present at 11–13 months (Byatt et al. 2024). Parents reported that they found the interventions useful, acceptable, and generally feasible. Challenges to attendance varied by country. In countries without maternity leave, feasibility of attending treatment was perceived as greater during pregnancy. In those with maternity leave, the opposite pattern emerged: The parents felt it was easier to attend treatment postnatally. Across all studies, women/BPs noted the burden of juggling health and mental health appointments alongside work and/or parenting demands. In most studies these challenges were supported with a briefer number of sessions and appointments offered during lunch/late afternoon/early evening and/or offered remotely. These issues should be especially noted for women/BPs with low incomes, who are more likely to struggle with higher overall treatment burden, less flexible employment leave policies, poorer access to reliable and/or convenient forms of transport, and fewer sources of childcare support, all of which reduce their ability to attend multiple and/or additional appointments. Models of coordinated or integrated care with health care appointments may be especially useful for this group of parents (Horenstein & Heimberg 2020). Together, these studies offer preliminary support for the effectiveness of brief, CBT-based, flexible, perinatally adapted interventions in treating GAD.

4.2. Obsessive–Compulsive Disorder

OCD is characterized by two core symptoms: obsessions (repeated, unwanted intrusive thoughts, images, doubts, or urges) and compulsions (actions, either physical or mental, designed to prevent the negative outcome or alleviate the anxiety caused by the obsession) (Am. Psychiatr. Assoc. 2013). To meet DSM-5 or ICD-11 diagnostic criteria, these experiences must cause considerable distress and functional impairment and/or take up at least an hour of the person's day (Am. Psychiatr. Assoc. 2013, World Health Organ. 2019).

4.2.1. Prevalence. The 12-month prevalence of OCD in the general population is approximately 1.1%, and women are 1.6 times more likely than men to experience it in their lifetime (Fawcett et al. 2020). The average age of onset is later for women than for men, and a significant proportion of women report onset as coinciding with menarche and reproductive cycle events (Guglielmi et al. 2014). The prevalence of OCD in the perinatal period (pOCD) is consistently higher than at other times. Diagnostic rates in pregnancy range between 2.1% and 2.3% and, in the postpartum period, between 1.7% and 2.4% (Fawcett et al. 2019, Russell et al. 2013). Studies using continuous measures of obsessive–compulsive symptoms (OCSs) have found much higher rates (e.g., 11% at 2 weeks postpartum; Miller et al. 2013). A study that assessed OCD at several perinatal time points using strict diagnostic criteria and enquiring specifically about infant-related thoughts of harm found that the prepregnancy prevalence was 2.6% [confidence interval (CI): 0.4–4.8]; the overall weighted prenatal prevalence was 7.8% (CI: 5.1–12), and in the postpartum period it was 16.9% (CI: 14–20.2). Prenatal prevalence rose during each trimester and reached a peak of 9% at 2 months postpartum (Fairbrother et al. 2021). The proportion of new incident pOCD cases ranges from 2% to 24%, both in pregnancy and in the postpartum period, with onset gradual or suddenly precipitated (Viswasam et al. 2019). The course of pOCD varies considerably; some women/BPs report a worsening of OCSs confined to pregnancy, while for others the symptoms remain high through the perinatal period, and in some cases the symptoms deteriorate postpartum (Asselmann et al. 2020). A large proportion of women/BPs with preexisting OCD (8–70%) report an exacerbation of symptoms perinatally (Ramirez et al. 2024).

4.2.2. Risk factors. The perinatal period involves facing objective increases in uncertainty, navigating physical risks through pregnancy, birth, and the postpartum period, and being responsible for a vulnerable and cherished infant. The cognitive theory of OCD predicts that these factors would contribute to increased OCSs at this time (Fairbrother & Abramowitz 2007). Consistently, unwanted intrusive thoughts (UITs) of accidental harm to the infant are a near-ubiquitous experience in the general perinatal population; approximately 50% of parents disclose UITs of deliberate harm (Fairbrother & Woody 2008, Walker et al. 2021). UITs are experienced by mothers/BPs and fathers/other nonbirthing parents (non-BPs) alike, though mothers/BPs experience them more frequently and experience them as more distressing. OCSs may have a protective evolutionary purpose in the early postpartum period by directing attention to threat and safety-seeking; it tends to subside as the infant develops (Leckman et al. 1999). The presence of additional cognitive risk factors, such as preexisting beliefs about the importance of thoughts, overly general appraisals of responsibility, and misappraisals of UITs, has been shown to predict higher distress (Ojalehto et al. 2021).

Additional perinatal factors may also contribute to onset and exacerbation. Poor prenatal sleep quality, complicated pregnancies, and traumatic births may increase OCSs (Drake et al. 2024, Holingue et al. 2021, Osnes et al. 2020). Caesarean delivery and younger age have been associated with more OCSs postnatally, but study samples are small (House et al. 2016). Women/BPs with preexisting OCD have been found to experience less optimal birth outcomes and more

complications, although the mechanisms are unclear, and this finding is not specific to OCD (Fernández de la Cruz et al. 2023). There is mixed evidence on the role of experiences of pregnancy loss, which may interact with cognitive risk factors to precipitate OCD in some people (Challacombe et al. 2016, Geller et al. 2001). Women/BPs with pOCD may be less likely to have a termination (Challacombe et al. 2016).

4.2.3. Content/phenomenology. Any form of OCD can occur in the perinatal period: OCSs related to accidental harm and contamination are common in pregnancy, while in the postpartum period OCSs around intentional harm, including physical and sexual abuse, are common (Starcevic et al. 2020). As with OCD at other times, the presence of unwanted thoughts of deliberate harm does not confer increased risk to the infant (Fairbrother et al. 2022c); misdiagnosis of pOCD and unwarranted social services intervention can prevent access to appropriate treatment and lead to iatrogenic harm (Challacombe & Wroe 2013). However, pOCD can be associated with secondary risks—that is, unintended consequences of time spent doing rituals, preoccupation, avoidance that limits normal activities, and involvement of children in rituals (Veale et al. 2009). pOCD negatively affects quality of life and couple relationships, although family accommodation has not been specifically studied in this context (Challacombe et al. 2016). Women/BPs with OCD or OCSs have been found to be somewhat less sensitive than controls during observed or reported interactions, although this may be driven by depressive rather than OC symptoms (Challacombe et al. 2016, Miller & O'Hara 2020). Rates of secure parent–infant attachment did not differ from those of controls in the one study that examined this issue directly (Challacombe et al. 2016).

4.2.4. Comorbidity. Depression is commonly comorbid with OCD, both during the perinatal period and otherwise, as well as GAD, phobias, and other ADs (Fairbrother et al. 2016, Fawcett et al. 2019). There is an interplay between mood and OCSs (Miller et al. 2015), but symptoms of depression usually remit with treatment of pOCD (Challacombe et al. 2017). Associations have also been found between symptoms of PTSD and OCSs (Drake et al. 2024).

4.2.5. Screening and assessment. Symptoms of OCD, in particular among perinatal people, are highly specific. As such, general perinatal screening tools, such as the EPDS, may miss OCD cases (Fairbrother et al. 2023). Both the Perinatal Obsessive-Compulsive Scale (POCS) and the Parental Thoughts and Behaviors Checklist (PTBC) are perinatal-specific, but they may be too long for use in general clinical settings (Lord et al. 2011, Thiséus et al. 2019). The four-item Obsessive-Compulsive Inventory (OCI) has recently demonstrated promise as a brief screening measure that could be used in general settings across the perinatal period (Abramowitz et al. 2024). As is true across all ADs occurring during the perinatal period, additional research is required to identify accurate and reliable screening measures.

4.2.6. Treatment and prevention. Building on well-established evidence for the effectiveness of CBT and exposure and response prevention for nonperinatal OCD, the evidence, predominantly drawn from case studies or series, supports their use for pOCD (Marchesi et al. 2016). Two small randomized controlled trials (RCTs) have highlighted the effectiveness of 12 hours of time-intensive individual CBT for pOCD in pregnancy ($n = 22$) and the postpartum period ($n = 34$) (Challacombe et al. 2017, 2024). The treatments involved exposure tasks and cognitive techniques, and there was excellent retention of 95% in both trials. The between-subjects effect size in the postpartum trial of 1.32 was comparable to that of nonperinatal CBT for OCD (1.31; Öst et al. 2015), and no adverse effects were reported. One prevention study ($n = 71$) used a psychoeducational intervention that included exposure delivered alongside standard prenatal classes for women/BPs who had scored above threshold on measures of cognitive risk to pOCD; fewer symptoms were observed postpartum among intervention group participants (Timpano

et al. 2011). Initial evidence for guided computerized interventions for UITs based on cognitive behavioral principles shows promise (Olofsdotter Lauri et al. 2023).

4.3. Panic Disorder

PD is characterized by unexpected, out-of-the-blue repeated episodes of intense fear accompanied by physical symptoms such as shortness of breath, heart palpitations, dizziness, and stomach pain.

4.3.1. Prevalence and course. Though panic attacks are common in the general population, the distinguishing factor in PD is that individuals avoid factors perceived to be associated with the attack. PD may occur with or without agoraphobia (a fear of being places where help is not easily available, such as a crowded location) (Am. Psychiatr. Assoc. 2013). In a recent review of 19 studies, the pooled prevalence estimate for PD in pregnancy, as determined by clinical interview, was 3%, with little variation across stages of pregnancy (Viswasam et al. 2019). This result is consistent with those of previous reviews, which found prevalence estimates of 0.2–5.7% across the perinatal period, highlighting that PD is more common in pregnancy than in the general population (1.6%). Although there are as yet few data on the timing of onset of PD, the severity of PD either does not change (9–84%) or improves throughout pregnancy (9–74%). For some individuals, PD worsens across the perinatal period (5–33%).

It is unclear why PD might have a higher prevalence in pregnancy, though its onset in the first or second trimesters might point to interactions involving rapid body changes in pregnancy, such as increased heart and respiratory rate, chest tightness, pain, shortness of breath, and increasing levels of progesterone, estrogen, and cortisol, coupled with a sensitivity to body sensations driving susceptibility to PD. The consequences of PD are similar to those of other ADs, although there is evidence that PD in parents is specifically predictive of ADs among offspring, in particular separation, panic, and social anxiety disorders as well as agoraphobia (Biederman et al. 2001).

4.3.2. Screening and assessment. There are no current measures for PD that are perinatal-specific or adapted for the perinatal period. Widely used assessments of PD in the general population include the Panic Disorder Severity Scale (PDSS), the Panic Disorder Self-Report (PDSR), and the Mobility Inventory for Agoraphobia (MI).

4.3.3. Treatment. There is as yet little research examining treatment for PD during the perinatal period, and there have been no trials as of the writing of this review. A recent RCT by Challacombe et al. (2024) compared intensive versus standard delivery of CBT for ADs in pregnancy. The nine pregnant women/BPs in the study who had PD responded well to treatment, and there were no adverse effects of treatment; these results suggest that CBT adapted for PD in the perinatal period may be effective and safe.

4.4. Social Anxiety Disorder/Social Phobia

Social anxiety disorder (SAD) is characterized by persistent fear of scrutiny and negative evaluation by others and avoidance of social situations (or endurance of such situations with distress). It is associated with markedly restricted social functioning (Am. Psychiatr. Assoc. 2013).

4.4.1. Prevalence/course. The estimated prevalence of SAD in the perinatal period ranges from 2.4% to 27.6% with rates below 7% in most studies (Fawcett et al. 2019). This is comparable to the 12-month prevalence of 7.1% in the general population (Kessler et al. 2005b). SAD tends to have an early age of onset (Wittchen & Fehm 2003) and can remain chronic in the absence of treatment (Bruce et al. 2005). New incident cases during the perinatal period are rare, although subclinical social fears are very common (Martini et al. 2013, Viswasam et al. 2019). The perinatal context may present new and specific challenges for those experiencing high social

anxiety (e.g., the need to interact with various health professionals and, ideally, develop relationships with other new parents). Investigations of perinatal-specific content of social fears are sparse, but being observably pregnant can elicit social attention, and fears of humiliation or embarrassment during birth have been noted, as well as social fears regarding breastfeeding or managing a crying infant in public (Martini et al. 2013). Social fears and norms vary across cultures, although such variation has not been investigated in the perinatal context (Heinrichs et al. 2006).

One study found that SAD symptoms decreased during pregnancy and increased during the postpartum period, and the return-to-work period coincided with increased symptoms for some (Martini et al. 2013). A longitudinal study found that SAD predicted postpartum depression at 1 and 12 months (Mauri et al. 2010), although SAD predicted depression at 10 months only in a further study; the authors proposed return to work as a possible explanation (Coelho et al. 2011).

4.4.2. Impact. One study found associations between prenatal SAD symptoms and FoB as well as subsequently more postpartum child-related fears (Mudra et al. 2020). Parents with elevated prenatal SAD symptoms reported more difficult infant behavior (Miller et al. 2021). As with all parental ADs, SAD raises the risk of offspring anxiety and mood disorders (Lawrence et al. 2019). In one study (Murray et al. 2008), parent–infant interactions were less sensitive compared with controls only in the presence of a stranger. Mothers/BPs with SAD were also less encouraging of interactions with the stranger, and infants subsequently exhibited less responsiveness to them. Infant behavioral inhibition, especially in conjunction with parental SAD, may increase the risk of offspring social anxiety (Hirshfeld et al. 1992).

4.4.3. Screening. Excepting the Perinatal Anxiety Screening Scale (PASS) (Somerville et al. 2014), many screening instruments do not encompass socially related fears, and SAD may be an under-recognized problem by providers and sufferers (Fairbrother et al. 2019).

4.4.4. Treatment. Very few perinatal intervention studies have included SAD as a specific diagnosis, although in general CBT is effective (Acarturk et al. 2009). A 6-week program of group CBT including SAD as one AD diagnosis led to reductions in anxiety symptoms in pregnant/postpartum women/BPs (Green et al. 2020). One study noted promising results for the use of individual time-intensive CBT (delivered mostly during a 2-week period) for pregnant women/BPs with SAD (Challacombe et al. 2024).

4.5. Separation Anxiety Disorder

4.5.1. General overview of separation anxiety disorder. SepAD is characterized by fears of separation from key attachment figures and is most often thought about in relation to children. Before the publication of the DSM-5, SepAD was included only under "Disorders Usually First Diagnosed in Infancy, Childhood, or Adolescence" with onset before age 18 required (Am. Psychiatr. Assoc. 1994). In the DSM-5, the diagnostic criteria for SepAD were broadened to allow a diagnosis of SepAD with adult onset and among adults (with childhood or adult onset) (Am. Psychiatr. Assoc. 2013). Large studies of the prevalence of adult-onset SepAD have resulted in prevalence estimates ranging from 2% to 5% (Shear et al. 2006, Silove et al. 2015).

Separation anxiety is associated with significant life impairment (Pini et al. 2010, Silove et al. 2015) and appears to be more impairing among people in high-income compared with low/lower-middle-income countries. As is true for most ADs, adult SepAD is more common among women compared with men, and it is frequently comorbid with other mood (53%) and anxiety (65%) conditions (Pini et al. 2010, Silove et al. 2015).

4.5.2. Perinatally occurring separation anxiety disorder.

4.5.2.1. Prevalence. Diagnostic interview-based studies of SepAD among women/BPs indicate a prevalence of approximately 21% (Eapen et al. 2012, Kohlhoff et al. 2015), which is significantly greater than the prevalence in general samples of adults.

4.5.2.2. Predictors. SepAD is associated with diminished self-esteem and coping skills, negative appraisals of one's parenting abilities, and suicidal ideation and neuroticism among parents (Hsu & Sung 2008, van Bussel et al. 2009). Among infants, there is evidence of increased distress and unsettled behavior (Hsu & Sung 2008, Kohlhoff et al. 2015). Symptoms of SepAD may also be greater among first-time mothers/BPs (Eapen et al. 2012).

4.5.2.3. Consequences. Among mothers/BPs, SepAD shows a strong relationship with anxiety and depression (Eapen et al. 2014, Kohlhoff et al. 2015), functional impairment (Eapen et al. 2012), and decisions related to parent–infant separations (e.g., the decision to return to work) (Cooklin et al. 2012). SepAD is associated with overprotective parenting (Cooklin et al. 2013), which has been associated with sleep difficulties (Scher 2008), separation fears (Peleg et al. 2006), and negative alterations in socioemotional development (Cooklin et al. 2013) in children.

4.5.2.4. Assessment. Several diagnostic interviews now assess SepAD [e.g., the Structured Clinical Interview for DSM-5 (SCID-5), the Diagnostic Assessment Research Tool (DART)]. Questionnaires include the Maternal Separation Anxiety Scale (MSAS) and the Adult Separation Anxiety Questionnaire (ASA-27) (Eapen et al. 2012, Kohlhoff et al. 2015). The ASA-27 has shown high concordance with the Adult Separation Anxiety Structured Interview (ASA-SI) (Manicavasagar et al. 2003).

4.5.2.5. Treatment. To our knowledge, there have been no RCTs of psychological treatment for SepAD in adults (perinatal or not), and there has been only one trial of medication for SepAD in adults (Schneier et al. 2017). This is understandable given the very recent addition of this condition to disorders one can diagnose in adults. However, considering what appears to be a prevalence among mothers/BPs of approximately 20%, efforts to evaluate interventions for this condition are much needed.

4.6. Specific Phobias

Phobias are marked, excessive fears about specific objects or situations and are associated with significant avoidance, distress, and impairment. Phobias regarding animals, heights, blood, injury, and specific situations are among the most common. The median lifetime prevalence of specific phobias is 7.2%; more females than males are affected at all stages. Phobias are associated with genetic loading and often, but not always, with direct or vicarious learning experiences (Eaton et al. 2018). Onset commonly occurs during childhood, but in females the incidence also rises during the ages of 20–35, coinciding with reproductive years (Eaton et al. 2018, Nath et al. 2020). Specific phobias have a perinatal prevalence of 1.6–19.9% and, as at other times, are frequently comorbid with other ADs (Fawcett et al. 2019, Nath et al. 2020, Viswasam et al. 2019). While phobias of any nature can coincide with the perinatal period, some, most notably emetophobia (fear of vomiting) and blood-injection-injury phobia (BII), are particularly relevant to pregnancy and early parenthood. Tokophobia/FoB is discussed elsewhere in this review.

Emetophobia has been associated with pregnancy termination, avoidance of pregnancy, and avoidance of surgical procedures or general anesthesia (Veale & Lambrou 2006). It can lead to food restriction and extensive avoidance of situations associated with perceived risks of contamination

linked to vomiting, such as baby groups and daycare for children (Orme et al. 2022). However, the perinatal prevalence and impact of emetophobia have not been systematically investigated.

BII has a unique physiological response among ADs that involves a vasovagal/parasympathetic surge. The prevalence in pregnancy is 0.8% (Nath et al. 2020). In severe cases of BII, women/BPs may delay presenting to prenatal services and avoid blood tests and injections (McAllister et al. 2012); a UK enquiry reported a case of a woman with a preexisting needle phobia who refused lifesaving heparin injections after a caesarean section (McClure et al. 2011). One study found increased concentrations of maternal cortisol in pregnant women/BPs with BII relative to pregnant controls (Lilliecreutz et al. 2011). If severe, specific phobias can have adverse impacts on both the parent and infant during the perinatal period, but there is little robust evidence from which to draw general conclusions.

4.6.1. Screening and assessment. Screening focused on mood or more general symptoms of anxiety may miss phobias.

4.6.2. Treatment. Perinatal treatment literature is sparse, although there is a robust general evidence base for the effectiveness of exposure-based therapy (Wolitzky-Taylor et al. 2008). However, only 10–25% of phobia sufferers seek help (Eaton et al. 2018). One 2-session, open trial of group CBT for BII in 30 pregnant women/BPs found reductions on measures of phobic anxiety and mood compared with control participants, with no adverse events reported (Lilliecreutz et al. 2010). Emetophobia can also be treated with exposure and CBT (Orme et al. 2022), although no perinatal-specific evidence exists.

4.7. Posttraumatic Stress Disorder

PTSD is defined by exposure to one or more traumatic events (e.g., actual or threatened death, serious injury, sexual violence) and the subsequent development of emotional, cognitive, and physical symptoms (Am. Psychiatr. Assoc. 2013). The 12-month prevalence of PTSD is 3.5%, and women are at a twofold higher risk than men (Am. Psychiatr. Assoc. 2013, Kimerling et al. 2018). PTSD in the general population is associated with a significant impact on functioning (unemployment, discontinued school), marital instability, suicide risk, increased partner distress, criminal/violent behavior, physical health, and lost productivity (over $3 billion USD) (Brady et al. 2000, Brunello et al. 2001, Donley et al. 2012, Pacella et al. 2013, Russin & Stein 2022).

4.7.1. Assessment and screening. Semistructured assessment tools such as the MINI (Sheehan et al. 1998) and the DART (McCabe et al. 2017) are considered the gold standard to confirm the diagnosis of PTSD. However, they are time-consuming and not always feasible to administer. Screening tools are helpful to determine symptom presence and severity. Symptom measures and screening tools such as the PTSD Checklist for DSM-5 (PCL-5) (Weathers et al. 1993) are helpful in both the general population and, recently, the perinatal population (Gobin et al. 2023). The City Birth Trauma Scale, a measure specifically used for postpartum PTSD, has good psychometric properties (Ayers et al. 2018).

4.7.2. Prevalence. Birth and the postpartum period represent a unique period of risk for the development of PTSD, particularly for women/BPs who are exposed to perinatal trauma (e.g., risk of death or serious injury to the infant or mother during birth). A 2017 systematic review and meta-analysis conducted by Yildiz et al. (2017) estimated the prevalence of PTSD during the first year postpartum at approximately 4% in community samples. However, among high-risk women/BPs (i.e., with a history of traumatic birth, emergency caesarean section, serious pregnancy complications, severe fear of birth, history of sexual/physical violence or childhood abuse, babies born at a very low birth weight, preterm birth, or fetal anomalies), the estimate increased to 18.5%.

Moreover, a history of psychological problems, previous diagnosis of PTSD, pre- and postnatal depression, stress, and poor coping skills also increase the risk of developing childbirth-related PTSD (CB-PTSD) (Ayers et al. 2016).

4.7.3. Impact. There is extensive impairment associated with CB-PTSD with respect to both the mother/BP and infant. With respect to the mother/BP, CB-PTSD is associated with avoidance of sexual activity and medical care and with choosing not to have more children (Gottvall & Waldenström 2002, Hofberg & Brockington 2000). Further, subsequent pregnancies can be affected with CB-PTSD, as a secondary FoB/tokophobia may develop (Hofberg & Brockington 2000) along with increased risk of maternal stress and its associated risks to the pregnancy and fetus (Seng et al. 2001). In addition, breastfeeding rates are lower among women/BPs with CB-PTSD, and there are negative impacts on the mother–infant relationship/attachment (Cook et al. 2018) and on one's relationship with one's partner. The impact of CB-PTSD can extend to difficulties in the social, emotional, and cognitive development of the infant (Garthus-Niegel et al. 2017).

4.7.4. Comorbidities. During the perinatal period, PTSD is often comorbid with other common ADs (e.g., specific phobia, 29%; OCD, 11.4%; GAD and agoraphobia, 10.6%; PD, 8.4%; Fawcett et al. 2019) and depression (Davidson et al. 2004).

4.7.5. Treatment. Psychological interventions, including cognitive processing therapy (CPT) (Asmundson et al. 2019) and prolonged exposure (Powers et al. 2010), are effective for many PTSD sufferers and demonstrate long-lasting results. CPT is strongly recommended by the American Psychological Association's clinical practice guidelines for the treatment of PTSD (Courtois 2017) and by the International Society for Traumatic Stress Studies (Chard & Healy 2020) with the support of a recent meta-analysis revealing large effect sizes in PTSD and related symptoms (e.g., depression and anxiety) compared with inactive controls. However, aside from a single case study (Gobin et al. 2023), research on the use of CPT for CB-PTSD has not been conducted; this lack of research represents a significant gap in the literature. Outside of CPT, research investigating psychological interventions following traumatic births is also scant, with some research investigating postpartum debriefing or counseling reporting mixed results (Asadzadeh et al. 2020, Bastos et al. 2015). Notably, psychological debriefing in the general population has not been found to be effective in reducing PTSD symptoms, and in some cases, it has been linked to increased PTSD symptoms at long-term follow-up compared with no intervention (Kearns et al. 2012). Trauma-focused CBT for CB-PTSD has received some empirical support (Furuta et al. 2018), including iCBT (Nieminen et al. 2016) and manualized CBT (Shaw et al. 2013, 2014). Finally, there is emerging use of eye movement desensitizing and reprocessing (EMDR) (Chiorino et al. 2020, Kopmeiners et al. 2023).

4.8. Fear of Childbirth

Although some fear in anticipation of childbirth is normal and is experienced by most pregnant people, for some, FoB can be very intense and results in clinically significant distress and impairment (Dencker et al. 2019, Hofberg & Ward 2003). Intense FoB, which is often referred to as tokophobia, can influence mode-of-delivery preferences (i.e., vaginal or caesarean birth), one's desire to become pregnant or continue a pregnancy, or one's decision to delay or avoid having children altogether (Hofberg & Ward 2003). FoB among nulliparous pregnant people is referred to as primary FoB, whereas FoB subsequent to a previous childbirth experience is referred to as secondary FoB. As the nature of primary and secondary FoB fears differs significantly, much of the literature distinguishes between them (Hofberg & Ward 2003).

4.8.1. Prevalence. The most recent meta-analysis of the prevalence of FoB resulted in a global pooled prevalence of 14% (O'Connell et al. 2017). However, individual estimates ranged broadly (3.7–43%) due to methodological differences in the questionnaires used, whether estimates were based on questionnaire assessments or those employing diagnostic interviews, and differences in definitions of clinically significant FoB (Challacombe et al. 2021, Nilsson et al. 2018).

The lack of an agreed-upon definition of clinically significant FoB makes determining its prevalence very challenging (Sharma & Sharma 2023). Ascertaining the most appropriate diagnostic category(ies) for clinically significant FoB has been identified as a high priority (Jomeen et al. 2021). Some have suggested that specific phobia may be the most appropriate diagnostic category for primary FoB and that PTSD is likely the most appropriate diagnostic category for secondary FoB (Räisänen et al. 2014). However, empirical evaluations of this question have only recently been undertaken.

To our knowledge, there are no published reports of the diagnostic classification of FoB. In response to this gap, our team has recently conducted a study of the diagnostic categories relevant to severe FoB, which is currently under review.

4.8.2. Impact of fear of childbirth. Many negative outcomes have been associated with FoB, including pregnancy termination (despite a desire for a child), increased likelihood of caesarean birth, prolonged labor dystocia, epidural anesthesia, preterm birth, low birth weight, unsuccessful breastfeeding, longer postpartum hospital stays, negative childbirth experiences, postpartum depression and stress, romantic relationship difficulties, impaired maternal bonding, and negative health behaviors (Challacombe et al. 2021, Laursen et al. 2009, Nilsson et al. 2018, Pazzagli et al. 2015). These outcomes make clear that understanding and treating clinically meaningful FoB should be a high priority.

4.8.3. Content of childbirth fears. FoB includes fears related to numerous anticipated aspects of one's childbirth experience (Fairbrother et al. 2018). The most frequently reported childbirth-related fears are fear of labor pain, the unpredictability of childbirth, low confidence about giving birth, and harm to one's infant or oneself (Sheen & Slade 2018).

4.8.4. Assessment. A broad range of self-report measures have been developed to assess FoB. They vary significantly in the number of items (from 1–2 up to 40 or more) and in the range of childbirth fear domains sampled. Not all of these measures are limited to fear-related items; some include items pertaining to feelings such as joy and sadness. Very few of the existing measures include the full range of pregnant people's childbirth-related fears (Fairbrother et al. 2022b). To our knowledge, only the Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ) (the most commonly used measure of FoB) and the Childbirth Fear Questionnaire (CFQ) have been assessed as screening tools for diagnosable FoB—and only for specific phobia, FoB (Fairbrother et al. 2022a). Data from these studies indicate that both measures perform reasonably well as screening tools for specific phobia, FoB, and that the W-DEQ has superior screening accuracy.

4.8.5. Treatment. Despite a multitude of different psychological interventions for FoB and numerous systematic reviews and meta-analyses of evaluations of these interventions, what constitutes the most effective treatment for FoB remains elusive. At this time there appears to be evidence of a modest effect of psychoeducation (i.e., a standard mean difference of 0.50; Akgün et al. 2020), mindfulness-based (MB) interventions (especially for birth-related feelings of self-efficacy), and interventions that include elements of CBT (e.g., interventions focused on birth-related appraisals, exposure; Abdolalipour et al. 2023, Akgün et al. 2020, Webb et al. 2021). Although several forms of MB interventions (e.g., mindfulness-based cognitive therapy,

mindfulness-based stress reduction) have been evaluated, there are insufficient data to know which form of MB intervention may be most effective.

5. SPECIAL CONSIDERATIONS IN THE TREATMENT OF ANXIETY-RELATED DISORDERS DURING THE PERINATAL PERIOD

5.1. Exposure Therapy

Psychological treatments for ADs are very well-established; the most effective are cognitive behavioral approaches (as well as EMDR for PTSD). A core component of these approaches for the majority of ADs is deliberate, planned, and repeated exposure to a feared stimulus, which could encompass objects, situations, memories, images, and bodily sensations (Lohr et al. 2012). In vivo or imaginal exposure enhances outcomes for PD, SAD, phobias, OCD, and PTSD (Parker et al. 2018). Similarly, a meta-analysis of interventions for perinatal anxiety symptoms concluded that CBT was effective, and when exposure was a component in the treatment, there was a larger effect size on perinatal anxiety symptoms ($d = 1.33$ versus $d = 0.82$) (Maguire et al. 2018). Therapists can, however, be reluctant to implement exposure techniques in clinical practice; one commonly cited reason is fear of the impact of exposure on clients, particularly when the person is pregnant (Meyer et al. 2014).

One concern about implementing exposure in pregnancy is that it will increase anxiety and maternal cortisol, which could negatively affect the fetus. As argued by Arch et al. (2012), several counterarguments should be considered. For instance, the negative impacts noted are associated with untreated maternal anxiety; women/BPs suited to exposure therapies are already clinically anxious, and pregnant women/BPs appear to show diminished physiological responses to acute stress on a variety of physiological indices (De Weerth & Buitelaar 2005). Cortisol levels and hypothalamic–pituitary–adrenal axis reactivity also increase in the context of healthy pregnancies (Mastorakos & Ilias 2003). Studies investigating the physiology of exposure have found no strong evidence (in nonpregnant populations) of a lasting effect on cortisol, even in the context of high subjective distress (Mayer et al. 2017). Although limited, data to date show no adverse effects of exposure when employed to treat AD in pregnancy (Baas et al. 2023). Importantly, the stress response during exposure is temporary, lasting 60–90 minutes and often much less before habituation occurs. While further data are needed for pregnant women/BPs, it is highly likely that the potential benefits of exposure-based treatments outweigh any risks in pregnancy because they would reduce anxiety and stress. Importantly, pregnant women/BPs indicate a strong preference for psychological therapy over pharmacotherapy for anxiety problems, including when exposure is clearly outlined as a component (Arch 2014).

5.2. Challenges and Potential Solutions for Treatment of Anxiety in the Perinatal Period

One of the biggest challenges with treatment for ADs in the perinatal period is the lack of psychological outcome research examining interventions tailored to each AD. Of all the ADs, GAD has received the most attention for psychological interventions during the perinatal period, and the outcomes are promising. However, the state of the literature is such that there are very few gold standard RCTs; instead, there have been studies with less rigorous research designs (case studies on OCD, open trials on specific phobia)—or no research at all (e.g., on PD)—evaluating psychological treatment outcomes during the perinatal period. Considering the unique time of life and novel content associated with the perinatal period (e.g., perinatal-specific worries in GAD, perinatal content in OCD), it is imperative to tailor the intervention content to meet the unique needs

of women/BPs so that the treatment hits the mark. Further, there are special considerations for offering psychological treatments to women/BPs with ADs, including the duration of an intervention (e.g., CBT for mood disorders or anxiety typically takes 12–16 sessions, which is not practical or feasible for many) and whether the woman/BP is able to have their infant attend. There have been trials conducted with success that have been shorter (e.g., 4–6 sessions), in which infants have been invited to join their mother/BP as they attended in person (e.g., Green et al. 2020, O'Mahen et al. 2022). Recently, the option of participating in virtual treatment has been offered, and no impact has been observed on the acceptability or effectiveness outcomes (Green et al. 2022).

6. EVIDENCE GAPS AND FUTURE DIRECTIONS

The perinatal period presents a number of physical, emotional, and social challenges that can combine with preexisting vulnerabilities to induce a clinically significant (i.e., diagnosable) anxiety. Further, ADs also can be specifically caused by or become oriented around these challenges. Those with a history of anxiety are more likely to experience perinatal ADs, although there are also de novo presentations. For example, PTSD can be caused by birth trauma, but prior experiences of assault and abuse can also compound risks. The context of caring for a new infant increases the frequency and salience of intrusive thoughts and worries, leading to higher rates of OCD and panic. Some presentations, such as SAD, emetophobia, and BII, have direct and new relevance in the perinatal period, while FoB and SepAD are crystalized by the context of pregnancy and having a child.

Further work is needed on perinatal AD classifications. Of note is that health anxiety has not been studied as a discrete disorder at this time, possibly because it is subsumed into other categories due to the perinatal context and contact with obstetric care. Adjustment disorder is often given as a diagnosis in clinical practice, reflecting the multiple challenges faced, but we do not currently have a good clinical topography of this issue. A better understanding of the phenomenology of perinatal ADs is important to refine diagnosis and target interventions, including early identification in pregnancy of those most at risk. The impact of untreated perinatal ADs is high not only because of interference with maternal functioning and parenting and its association with risk for later depression but also because of the potential consequences for the developing child.

Although there is some emerging evidence regarding specific treatments that are tailored to meet the unique needs of pregnant and postpartum people who have specific ADs, this literature is still in its infancy, especially compared with the many treatment trials that exist for perinatal depression. Further, most existing studies are not AD-specific but rather capture perinatal anxiety or symptoms of anxiety and often are part of a secondary analysis. Even though CBT is considered the first-line treatment for ADs in nonperinatal populations, it is imperative to recognize the unique context of the perinatal period whereby traditional CBT protocols for ADs may not produce the same positive outcomes. Taken together, there is a dearth of treatment trials for ADs during the perinatal period. Research examining protocols for specific ADs tailored to meet the needs of women/BPs during pregnancy and in the postpartum period is critically needed as the stakes around untreated ADs/ineffective treatments are high given the subsequent negative impacts to women/BPs, their infants, and their families.

In the area of screening for ADs among perinatal people, there remain two key, urgent needs: the identification of one or more accurate and reliable screening tools for these disorders, and evaluations of the impact of systematic screening, using self-report tools, on mental health outcomes. For these investigations to be useful, screening tool accuracy should be evaluated using gold standard methodology, in particular via comparisons with diagnostic interview results. There is recent controversy regarding the effectiveness of systematic screening for depression in improving mental health (O'Connor et al. 2023). To our knowledge, there are no published reports of RCTs

regarding the impact of screening for anxiety among perinatal people on anxiety symptoms. Our research group has now completed such a trial, and subsequent findings will be published.

The COVID-19 pandemic highlighted an area of significant concern for new parents—namely, the gender disparity in the distribution of family labor (e.g., household chores and management, childcare). It became clear that mothers/BPs continue to provide more unpaid family labor compared with fathers/non-BPs. Mothers/BPs are often overwhelmed by early parenting, not infrequently working 11-hour days, 7 days a week, with minimal to no free time. What we have yet to fully understand is how the load of parenting and domestic labor affects mental health. It remains to be clarified how much of the mental health difficulties experienced by mothers/BPs in the postpartum period could be ameliorated if they had a more reasonable amount of family labor, sleep, and free time/time for self-care. More research is needed on the perinatal manifestations and impact of specific disorders on the sufferer and the wider family. OCD is one disorder that is clearly more prevalent perinatally, and there are opportunities to better understand its etiology and course and to develop preventive and early interventions.

The perinatal period also presents challenges for sexual and gender minority parents. Difficulties include decision making related to becoming pregnant (e.g., for parents in same-sex partnerships, seeking a sperm donor/surrogate and/or considering artificial insemination) and protecting one's ability to reproduce among transgender people (e.g., freezing one's sperm for future childbearing). In many jurisdictions, these unique reproductive needs are expensive and can be complicated to arrange. In some countries, they may be prohibited. For transgender people assigned female sex at birth, becoming pregnant may necessitate ceasing hormone therapy and lead to significant gender dysphoria. Research pertaining to these issues is minimal. Discrimination against sexual and gender minority people is common and serious, with a high likelihood of increasing anxiety—especially regarding reproduction, where one is also concerned about the safety and well-being of one's child (Carpenter & Niesen 2021, Pezaro et al. 2023). The perinatal period may also present challenges for neurodiverse parents. These can include sensory challenges related to one's pregnancy and parenting, experiences with health care services, and one's experience of childbirth. Reasonable accommodations specific to the patient can improve their experience (Westgate et al. 2024). The literature in these areas is limited, and additional research is needed.

7. CONCLUSION

The literature pertaining to ADs during the perinatal period makes clear that these conditions are common, impairing, and distressing for those who experience them, with potential adverse consequences for offspring. It is also clear that some unique aspects of ADs during the perinatal period further support the need for attention specific to perinatally occurring ADs. Although research has advanced in this area with increasing recognition that these disorders are highly relevant to perinatal people, there are nevertheless significant gaps in knowledge that require urgent attention.

SUMMARY POINTS

1. Anxiety disorders affect one in five women and birthing persons in the perinatal period.
2. Some disorders such as obsessive–compulsive disorder and fear of childbirth are precipitated or exacerbated by pregnancy, birth, or the postpartum period.

3. The content of perinatal anxiety disorders tends to orient around pregnancy, birth, the baby, and/or parenting.
4. Perinatal anxiety disorders are likely underrecognized and undertreated.
5. Social inequalities affect severity, identification, and help-seeking in the context of anxiety disorders.

FUTURE ISSUES

1. The development and identification of accurate screening instruments for perinatally occurring anxiety and related disorders are urgently needed.
2. There is a need to develop and evaluate perinatally tailored interventions for anxiety and anxiety-related disorders.
3. Once identified, the impact of effective treatments for perinatally occurring anxiety and anxiety-related disorders on parenting and child developmental outcomes requires evaluation.

DISCLOSURE STATEMENT

H.A.O. is employed by the National Health Service (NHS) England one day a week as a National Clinical Advisor, is a member of the British Association for Behavioural and Cognitive Psychotherapies, the Marcé Society, and the Perinatal "Executive Faculty" of the British Psychological Society, has received grants from the Economic and Social Research Council (ESRC), the National Institute for Health and Care Research (NIHR), and the Medical Research Council (MRC), and is an owner of the Pearl Institute of Perinatal Psychology. F.L.C. is chair of the Perinatal Special Interest Group of the British Association of Behavioural and Cognitive Psychotherapy and a patron of the service user charity Maternal OCD. She is also a member of the International Marcé Society and the British Psychological Society. N.F. has received grants from Wellcome, Health Research BC, and the Canadian Institutes of Health Research. N.F. is a member of the Scientific Advisory Group for Maternal OCD; a founding member of the Canadian Association of Cognitive and Behavioural Therapies (CACBT-ACTCC); a member of the Marcé Society of North America (MONA); a member of the Canadian Psychological Association (CPA); a member of the BC Children's Hospital Research Institute (Brain, Behavior & Development theme); a member of the Women's Health Research Institute, Mental Health and Addictions Research Unit; a member of the Canadian Perinatal Mental Health Collaborative; and a member of the Women's Health Research Cluster, Djavad Mowafaghian Centre for Brain Health, Department of Psychology, University of British Columbia. N.F. also served as a member and section co-lead of the Core Editorial Team, Perinatal Mood and Anxiety, for the Disorder Treatment Guideline, Canadian Network of Mood and Anxiety Treatments (CANMAT) (now concluded). S.M.G. is a member of the CPA, a member and fellow of the CACBT-ACTCC, a member of the Association for Behavior and Cognitive Psychotherapies (ABCT), and author of the book *Cognitive Behavioral Therapy for Anxiety and Depression During Pregnancy and Beyond: How to Manage Symptoms and Maximize Well-Being*, published by Routledge, New York. She also served as a member and section co-lead of the Core Editorial Team, Perinatal Mood and Anxiety, for the Disorder Treatment Guideline, CANMAT (now concluded).

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