# Postpartum Distress Among Women With and Without Attention-Deficit/Hyperactivity Disorder

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## Abstract

**Objective:** The goal of this study was to examine the prevalence of postpartum distress among women with attention-deficit/hyperactivity disorder (ADHD).

**Methods:** Using a large electronic health records registry, a sample of 13,588 women with and 474,789 women without ADHD (18–45 years old) who had birth delivery records between 2010 and 2022 was identified. The prevalence of distress, including depression, anxiety, obsessive-compulsive disorder (OCD), and stress-related disorders at 6 weeks and 12 months following delivery, was compared between groups. Analyses also considered the effects of other factors associated with postpartum distress, including age, race, and ethnicity, as well as preexisting physical and mental health concerns.

**Results:** Relative to women without ADHD, women with ADHD reported higher rates of depression, OCD, and stress-related disorders at 6 weeks and 12 months following delivery. Compared to women without ADHD, and considering the effects of race, ethnicity, age, and preexisting mental and physical health conditions, women with ADHD were 1.14 times more likely to be diagnosed with mood disorder at 6 weeks postpartum and 1.21–1.24 times more likely to be diagnosed with a mood, anxiety, or stress-related disorder at 12 months postpartum.

**Conclusion:** Women with ADHD face adversity in the acute and long-term postpartum periods. Future research examining mechanisms of postpartum risk and resilience is needed to guide the development of treatments to support women with ADHD during this sensitive developmental period.


*J Clin Psychiatry 2025;86(3):24m15724*

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By adolescence, girls with attention-deficit/hyperactivity disorder (ADHD) are more than twice as likely as girls without ADHD to be diagnosed with a mood or anxiety disorder.[1,2] Elevated rates of anxiety and depression persist throughout their lifespan,[1] with as many as 35% of women with ADHD reporting a co-occurring anxiety disorder, and upwards of 70% of women with persistent ADHD reporting a co-occurring diagnosis of depression.[3] The combination of ADHD with co-occurring depression and anxiety is associated with a more severe clinical course, higher health care costs, and increased risk of suicidality relative to ADHD alone.[4,5] Thus, it is critical to examine factors that enhance risk for depression and anxiety among women with ADHD and identify sensitive periods of risk for this comorbidity in order to develop effective interventions.

The postpartum period, including the acute (ie, first 6 weeks following childbirth) and long-term (ie, 12 months following childbirth) phases, may introduce new risk for depression and anxiety among women with ADHD. Social and biological changes ongoing in the postpartum period present risk for many women with and without ADHD. An estimated 50% of women in the general population experience mood disturbances in the early postpartum period, and a subset of these women, approximately 15%–25%, develop clinically significant symptoms that persist and require medical care.[6] Furthermore, as many as 10%–20% of women experience postpartum anxiety and related disorders such as obsessive-compulsive disorder (OCD) and stress-related disorders.[7,8] Yet, this risk may be particularly pronounced among women with ADHD, who experience many of the risk factors associated with postpartum distress. Preexisting mood and anxiety disorders,[9] substance use,[10] and health conditions such as obesity and diabetes[10,11] have been shown to enhance risk for postpartum depression and anxiety, and women



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## Clinical Points

- The postpartum period may present significant risk for mental health difficulties for women with attention-deficit/hyperactivity disorder (ADHD).
- Women with ADHD should be carefully monitored for mood, anxiety, and stress-related disorders in the postpartum period in order to expedite treatment options.

with ADHD are more likely than women without ADHD to experience these stressors.[12,13] Furthermore, additional life stressors, including early age at pregnancy, have also been identified as enhancing risk for postpartum distress,[10] and some emerging work suggests that women with ADHD are at risk for early pregnancy.[14,15] Empirical evidence focused on postpartum functioning in women with ADHD has only recently emerged.[16] Within a sample of 209 women (18–71 years old) presenting for outpatient ADHD care, a subsample of 85 women with at least 1 biological child was identified and retrospectively reported on their depressive symptoms during the birth of their first child on the Edinburgh Postnatal Depression Scale. Based on a cutoff score of 10, 49 (57.6%) met criteria for postpartum depression after the first childbirth,[16] a prevalence rate more than double that reported among women without ADHD.[6]

Two large registry studies provide further evidence of distress among women with ADHD during the postpartum period. The first study was conducted within a large health registry of women in Sweden who had given birth to their first or second child between 2005 and 2013.[17] In the sample (n = 776,562), 0.5% were identified with ADHD, and data from the first year after childbirth were considered. Among women with ADHD, 16.76% were diagnosed with depression disorders in the postpartum period, compared to 3.29% of women without ADHD. Additionally, 24.92% of women with ADHD, compared to 4.61% of women without ADHD, were diagnosed with anxiety disorders in the postpartum period. ADHD was associated with postpartum depression and anxiety even when considering other well-known risk factors,[17] including maternal age and anxiety and depression prior to pregnancy. The second, even larger, study was conducted using patient health records from women with (n = 45,737) and without (n = 42,916) ADHD (groups balanced by age, race, and ethnicity) receiving care in large healthcare organizations predominantly in the United States from the TriNetX database.[18] In this study, postpartum depression was one of several other obstetric complications considered. With few exceptions, women with ADHD were identified with significantly more obstetric complications, including depression. Among women with ADHD, 2.1% were identified with postpartum depression compared to 1.2% of women without ADHD. While these rates are quite low relative to the small extant literature on postpartum distress among women with ADHD as well as women in the general population, 15.7% of women with ADHD were also identified with a depressive episode compared to 6.6% of women without ADHD. These outcomes were presented separately, presumably because they reflect different diagnostic codes; postpartum depression specifically reflects the acute period following delivery.[19] However, the exact period of study and follow-up was not specified. Research that clarifies the temporal course of postpartum distress among women with ADHD while also considering the effects of other factors, such as health and demographic factors that may enhance risk, is needed to more comprehensively understand the postpartum burden associated with ADHD.

For this study, we used the TriNetX database to examine the prevalence of postpartum distress among women with and without ADHD. This is the same database used previously to document obstetric complications in women with ADHD,[18] yet we will focus specifically on the relative risk for postpartum psychopathology, including depression, anxiety, OCD, and stress-related disorders, among women with and without ADHD in both the acute (ie, 6 weeks following delivery) and long-term (ie, 1 year following delivery) postpartum periods. It was hypothesized that women with ADHD would have higher rates of depression, anxiety, OCD, and stress-related disorders relative to women without a diagnosis of ADHD at 6 weeks and 12 months following delivery. Further, it was hypothesized that women with ADHD would have more preexisting physical (ie, obesity, diabetes) and mental health (ie, depression, anxiety, bipolar disorder, substance use disorders) problems relative to women without ADHD. Lastly, even when considering these additional risk factors associated with postpartum distress, including maternal age, race and ethnicity, and preexisting mental and physical health concerns, it was hypothesized that ADHD would explain unique and significant variance in postpartum outcomes at 6 weeks and 12 months postpartum.

## METHODS

### Study Design and Data Sources

This retrospective observational study includes electronic health records (EHRs) from the TriNetX Research Network (Cambridge, Massachusetts), which contains deidentified EHR data from more than 80 million patients from over 95 participating healthcare organizations predominately from the United States. Data in the TriNetX database have undergone extensive curation and mapping to common clinical terminologies to ensure referential integrity and reliability,[20] consistent with the Reporting of studies Conducted using

Observational Routinely collected Data (RECORD) guidelines.[21] TriNetX data used in the study did not contain protected health information; this research was determined to be exempt from Institutional Review Board oversight by the Pennsylvania State University's Human Research Protection Program.

### Study Population

The study population consisted of women (18–45 years old) who had birth delivery records in the enrollment period between January 2010 and December 2022. Only the first delivery event was included in the analysis when a person had multiple birth deliveries in the enrollment period. The health outcome data of the participants were collected through December 2023 so that all the participants had a 12-month follow-up period after delivery. Moreover, eligible participants were required to have at least 2 visits after the delivery and at least 1 visit occurring after 6 months of delivery, to ensure patients were actively managed during the study assessment period. Women diagnosed with ADHD prior to the delivery were assigned to the ADHD cohort, based on the presence of *ICD-10* diagnostic code (F90) in EHRs. Women without ADHD were assigned to the non-ADHD cohort.

### Outcome Measures and Baseline Characteristics

Postpartum diagnoses of interest are reported in Table 1. These include mood disorder, anxiety disorders, OCD, and stress-related disorder. Two binary variables were created for each outcome based on whether the diagnosis was identified within 6 weeks and 12 months of the delivery. The length of the follow-up time was computed between the date at delivery and the diagnosis date of each outcome. The right-censored was applied in the analysis if no outcome event was recorded within the respective follow-up period.

The baseline characteristics of the study participants were extracted at the time of delivery. The demographic characteristics included age at delivery and race/ethnicity (Hispanic, non-Hispanic White, non-Hispanic Black, and Other). Clinical conditions known to increase the risk of postpartum distress were extracted, including diabetes, obesity/overweight, depression, anxiety, bipolar disorder, and substance use disorder.[9–11] The presence of stimulant and antidepressant prescriptions for treating ADHD and other mental health conditions before 12 months of delivery was also included in the analysis. Detailed information about the baseline characteristics is provided in Table 2.

### Statistical Analysis

Descriptive statistics were computed to describe the sample at baseline. Differences in baseline characteristics between the ADHD and control cohorts were assessed with Mann-Whitney tests for continuous and $\chi^2$ tests for categorical variables. Multivariate Cox proportional hazards regression models were applied using the Kaplan-Meier method to assess the risk of a postpartum mental health problems during the 6-week and 12-month follow-up periods, controlling for baseline characteristics. Adjusted hazard ratios (aHRs) with 95% confidence intervals (CIs) were computed for each factor in the model. The significance level was determined based on a 2-tailed $P$ value < .05.

## RESULTS

### Overall Sample Population

The study sample included 488,386 adult women, with 13,588 (2.8%) in the ADHD cohort and 474,798 (97.2%) in the control cohort, mirroring rates of ADHD reported in the general population.[22] At baseline (Table 2), the population of the ADHD cohort was younger and included more non-Hispanic and White women relative to the non-ADHD cohort. The ADHD cohort also had a higher percentage of women with diagnoses of diabetes, overweight/obesity, mental health conditions, and substance use disorder, and was more likely to be treated with stimulant medication and antidepressant medication in the 12-month period prior to delivery compared to the non-ADHD cohort ($P$ < .05).

### Six-Week Postpartum Outcomes

Results of the $\chi^2$ analyses showed that mood disorder, OCD, and stress-related disorder were identified more frequently among women with ADHD relative to women without ADHD (Table 3). Women in the ADHD group were also more likely to report a greater number of postpartum distress diagnoses compared to women in the non-ADHD group. Among women with and without ADHD who were identified with a postpartum diagnosis, the majority were identified with only 1 postpartum diagnosis.

Cox proportional hazards regression model revealed that women with ADHD were 1.14 times more likely to be diagnosed with mood disorder within 6 weeks postpartum (aHR = 1.14, 95% CI, 1.04–1.23) (Table 4), but the effects of ADHD on anxiety disorder, OCD, and stress-related disorder were not significant. In general, younger age and non-White race were associated with lower risk of 6-week postpartum mental health outcomes; preexisting medical and mental health comorbidities and antidepressant medication before delivery were associated with greater risk of all postpartum mental health issues.

### 12-Month Postpartum Outcomes

Results of the $\chi^2$ analyses showed that mood disorder, stress-related disorder, and OCD were reported

Table 1.

## Description of Coding Systems and Codes

| Coding system | Code | Description |
|---|---|---|
| **Cohort population** | | |
| ***ICD-10*** | F90 | Attention-deficit/hyperactivity disorder |
| **Postpartum outcome** | | |
| ***ICD-10*** | F063.0, F063.1, F063.2, F063.3, F063.4, F301.0, F301.1, F301.2, F301.3, F302, F303, F304, F308, F309, F310, F311.0, F311.1, F311.2, F311.3, F312, F313.0, F313.1, F313.2, F314, F315, F316.0, F316.1, F316.2, F316.3, F316.4, F317.0, F317.1, F317.2, F317.3, F317.4, F317.5, F317.6, F317.7, F317.8, F318.1, F318.9, F319, F320, F321, F322, F323, F324, F325, F328, F328.1, F328.9, F329, F330, F331, F332, F333, F334.0, F334.1, F334.2, F338, F339, F340, F341, F348, F348.1, F348.9, F349, F39, R458.6 | Mood disorder |
| ***ICD-10*** | F41 | Anxiety |
| ***ICD-10*** | F42 | Obsessive-compulsive disorder |
| ***ICD-10*** | F43 | Stress-related disorder |
| **Baseline characteristics** | | |
| ***ICD-10*** | E10–E11 | Diabetes (types I and II) |
| ***ICD-10*** | E66 | Overweight/obesity |
| ***ICD-10*** | F32, F33 | Depression |
| ***ICD-10*** | F41 | Anxiety |
| ***ICD-10*** | F31 | Bipolar disorder |
| ***ICD-10*** | F10–F19 | Substance use disorder |
| **Medications** | | |
| **RxNorm** | 725, 3288, 6816, 6901, 352372, 700810 | Stimulant medication |
| **RxNorm** | 42347, 36437, 4493, 321988, 2556, 32937, 42355 | Antidepressant |

Table 2.

## Summary Statistics of the Study Population

| Baseline characteristics | All population, N =488,386 | ADHD cohort, N=13,588 | Non-ADHD cohort, N=474,798 | *P* |
|---|---|---|---|---|
| **Age at delivery, mean ± SD, y** | 29.2 ± 5.8 | 27.0 ± 6.0 | 29.2 ± 5.8 | <.01 |
| **Race/ethnicity, n (%)** | | | | |
| Hispanic | 90,751 (18.6) | 1,073 (7.9) | 89,678 (18.9) | <.01 |
| Non-Hispanic White | 240,304 (49.2) | 9,761 (71.8) | 230,543 (48.6) | |
| Non-Hispanic Black | 81,183 (16.6) | 1,750 (12.9) | 79,433 (16.7) | |
| Other race | 76,148 (15.6) | 1,004 (7.4) | 75,144 (15.8) | |
| **Diabetes, n (%)** | 43,488 (8.9) | 1,741 (12.8) | 41,747 (8.8) | <.01 |
| **Obesity/overweight, n (%)** | 77,811 (15.9) | 3,565 (26.2) | 74,246 (15.6) | <.01 |
| **Depression, n (%)** | 57,056 (11.7) | 6,385 (47) | 50,671 (10.7) | <.01 |
| **Anxiety, n (%)** | 77,123 (15.8) | 8,276 (60.9) | 68,847 (14.5) | <.01 |
| **Bipolar, n (%)** | 13,979 (2.9) | 2,957 (21.8) | 11,022 (2.3) | <.01 |
| **Substance use disorder, n (%)** | 70,036 (14.3) | 6,227 (45.8) | 63,809 (13.4) | <.01 |
| **Stimulant medication[a], n (%)** | 3,985 (0.8) | 2,530 (18.6) | 1,455 (0.3) | <.01 |
| **Antidepressant[a], n (%)** | 39,368 (8.1) | 3,354 (24.7) | 36,014 (7.6) | <.01 |

[a]Medications prescribed within 12 months before the delivery.
Abbreviation: ADHD = attention-deficit/hyperactivity disorder.

more frequently among women with ADHD relative to women without ADHD at 12 months postpartum (Table 3). A trend emerged suggesting that postpartum anxiety was more prevalent among women with versus without ADHD. Women in the ADHD group were also more likely to report a greater number of postpartum distress diagnoses compared to women in the non-ADHD group. Among women with and without ADHD who were identified with a postpartum diagnosis, the majority were identified with only 1 postpartum diagnosis.

Cox proportional hazards regression model showed that women with ADHD were 1.22–1.24 times more likely to be diagnosed with mood disorder (aHR = 1.22, 95% CI, 1.01–1.46), anxiety disorder (aHR = 1.24, 95% CI, 1.12–1.37), and stress-related disorder (aHR = 1.21, 95% CI, 1.07–1.37) within 12 months of birth delivery, compared to those without ADHD (Table 5). No

Table 3.

## Postpartum Distress Outcomes

| Outcome | All population | ADHD cohort | Non-ADHD cohort | *P* |
|---|---|---|---|---|
| **6-week postpartum outcomes** | | | | |
| **Postpartum diagnoses, n (%)** | | | | |
| Mood disorder | 19,263 (3.9) | 1,790 (13.2) | 17,473 (3.7) | <.01 |
| Anxiety | 3,331 (0.7) | 84 (0.6) | 3,247 (0.7) | .36 |
| OCD | 82 (0.1) | 8 (0.1) | 74 (0.1) | <.01 |
| Stress-related disorder | 1,636 (0.3) | 63 (0.5) | 1,573 (0.3) | <.01 |
| **No. of postpartum diagnoses, n (%)** | | | | |
| 0 | 466,137 (95.4) | 11,721 (86.3) | 454,416 (95.7) | <.01 |
| 1 | 20,358 (4.2) | 1,793 (13.2) | 18,565 (3.9) | |
| 2 | 1,719 (0.4) | 70 (0.5) | 1,649 (0.1) | |
| 3 | 172 (0) | 4 (0) | 168 (0.0) | |
| 4 | – | – | – | |
| **12-month postpartum outcomes** | | | | |
| **Postpartum diagnoses, n (%)** | | | | |
| Mood disorder | 67,284 (13.8) | 8,133 (59.9) | 59,151 (12.5) | <.01 |
| Anxiety | 15,915 (3.3) | 480 (3.5) | 15,435 (3.3) | .07 |
| OCD | 1,758 (0.4) | 415 (3.1) | 1,343 (0.3) | <.01 |
| Stress-related disorder | 22,223 (4.6) | 3,705 (27.3) | 18,518 (3.9) | <.01 |
| **No. of postpartum diagnoses, n (%)** | | | | |
| 0 | 432,183 (88.5) | 9,248 (68.1) | 422,935 (89.1) | <.01 |
| 1 | 46,179 (9.5) | 3,851 (28.3) | 42,328 (8.9) | |
| 2 | 8,742 (1.8) | 433 (3.2) | 8,309 (1.8) | |
| 3 | 1,260 (0.3) | 56 (0.4) | 1,204 (0.3) | |
| 4 | 22 (0) | – | 22 (0) | |

Abbreviations: ADHD = attention-deficit/hyperactivity disorder, OCD = obsessive-compulsive disorder.

Table 4.

## ADHD and Risk of Postpartum Distress Diagnoses at 6 Weeks

| Characteristics | Mood disorder aHR (95% CI)[a] | Anxiety aHR (95% CI)[a] | OCD aHR (95% CI)[a] | Stress-related disorder aHR (95% CI)[a] |
|---|---|---|---|---|
| **ADHD** | **1.14* (1.04–1.23)** | 1.06 (0.79–1.42) | 1.38 (0.53–3.58) | 1.01 (0.72–1.42) |
| **Age at delivery** | 0.97** (0.97–0.98) | 0.99** (0.98–0.99) | 0.99** (0.94–1.03) | 1.02** (1.01–1.03) |
| **Race/ethnicity (ref: White)** | | | | |
| Hispanic | 0.75** (0.72–0.78) | 0.45** (0.39–0.52) | 0.37 (0.13–1.06) | 0.96 (0.80–1.15) |
| Black | 0.86** (0.83–0.90) | 0.42** (0.37–0.49) | 0.81 (0.37–1.77) | 1.15 (0.96–1.36) |
| Other race | 0.81** (0.77–0.84) | 0.59** (0.51–0.67) | 0.67 (0.28–1.61) | 1.04 (0.86–1.25) |
| **Diabetes** | 1.22** (1.17–1.28) | 1.30** (1.12–1.50) | 0.97 (0.41–2.30) | 1.22* (1.01–1.47) |
| **Obesity/overweight** | 1.41** (1.36–1.46) | 1.35** (1.20–1.51) | 0.68 (0.33–1.41) | 1.46** (1.26–1.69) |
| **Depression** | –[b] | 2.09** (1.81–2.41) | 2.03* (1.02–4.05) | 1.72** (1.43–2.06) |
| **Anxiety** | 1.82** (1.76–1.89) | –[c] | 2.90** (1.49–5.65) | 1.74** (1.47–2.06) |
| **Bipolar** | 1.00 (0.99–1.01) | 1.60** (1.26–2.03) | 1.76 (0.77–4.02) | 1.12 (0.84–1.50) |
| **Substance use disorder** | 1.66** (1.60–1.72) | 1.61** (1.43–1.80) | 0.76 (0.39–1.46) | 1.45** (1.24–1.69) |
| **ADHD medication[d]** | 1.06 (0.92–1.22) | 0.95 (0.58–1.56) | 2.06 (0.54–7.84) | 1.08 (0.61–1.91) |
| **Antidepressant[d]** | 2.93** (2.81–3.05) | 2.34** (2.03–2.69) | 1.96* (1.03–3.72) | 1.55** (1.29–1.86) |

[a]aHR represents adjusted odds ratio, and 95% CI represents the 95% confidence interval of aHR.
[b]Individuals diagnosed with depression before the birth delivery were removed from the model used to predict the postpartum mood disorder.
[c]Individuals diagnosed with anxiety before the birth delivery were removed from the model used to predict the postpartum anxiety.
[d]Medications prescribed within 12 months before the delivery.
*$P < .05$; **$P < .01$.
Abbreviations: ADHD = attention-deficit/hyperactivity disorder, aHR = adjusted hazard ratio, OCD = obsessive-compulsive disorder.

difference in the risk of OCD was found between the ADHD and control cohorts. Younger women and women in the minority groups were generally at lower risk of developing postpartum mental health outcomes, whereas women with preexisting medical and mental health comorbidities and those prescribed antidepressant medication before delivery were at greater risk of all postpartum-related mental health issues. Women prescribed ADHD medication before delivery were at increased risk for postpartum anxiety.

Table 5.
**ADHD and Risk of Postpartum Distress Diagnoses at 12 Months**

| Characteristics | Mood disorder aHR (95% CI)[a] | Anxiety aHR (95% CI)[a] | OCD aHR (95% CI)[a] | Stress-related disorder aHR (95% CI)[a] |
|---|---|---|---|---|
| **ADHD** | **1.22* (1.01–1.46)** | **1.24** (1.12–1.37)** | 0.96 (0.68–1.36) | **1.21** (1.07–1.37)** |
| **Age at delivery** | 0.98** (0.97–0.98) | 0.98** (0.98–0.98) | 1.00 (0.98–1.01) | 0.99* (0.99–1.00) |
| **Race/ethnicity (ref: White)** | | | | |
| Hispanic | 0.98 (0.90–1.05) | 0.49** (0.46–0.51) | 0.47** (0.35–0.64) | 0.84** (0.77–0.90) |
| Black | 1.05 (0.98–1.13) | 0.46** (0.43–0.48) | 0.44** (0.32–0.60) | 1.01 (0.94–1.08) |
| Other race | 0.88** (0.81–0.96) | 0.57** (0.54–0.60) | 0.64** (0.48–0.84) | 0.92* (0.85–0.99) |
| **Diabetes** | 1.32** (1.21–1.44) | 1.20** (1.13–1.26) | 1.00 (0.75–1.28) | 1.25** (1.15–1.35) |
| **Obesity/overweight** | 1.61** (1.51–1.72) | 1.18** (1.13–1.23) | 1.11 (0.90–1.37) | 1.19** (1.11–1.26) |
| **Depression** | –[b] | 1.84** (1.75–1.95) | 1.38** (1.11–1.73) | 1.65** (1.53–1.77) |
| **Anxiety** | 1.74** (1.61–1.87) | –[c] | 3.85** (3.12–4.75) | 1.85** (1.73–1.98) |
| **Bipolar** | 1.00 (0.99–1.00) | 1.28** (1.16–1.40) | 1.52** (1.15–2.03) | 1.35** (1.21–1.51) |
| **Substance use disorder** | 1.56** (1.46–1.68) | 1.56** (1.50–1.63) | 1.03 (0.84–1.27) | 1.48** (1.39–1.57) |
| **ADHD medication[d]** | 0.91 (0.68–1.21) | 1.39** (1.19–1.61) | 1.40 (0.81–2.42) | 1.20 (0.96–1.48) |
| **Antidepressant[d]** | 4.13** (3.83–4.47) | 2.03** (1.92–2.14) | 1.73** (1.40–2.13) | 1.23** (1.14–1.33) |

[a]aHR represents adjusted odds ratio, and 95% CI represents the 95% confidence interval of aHR.
[b]Individuals diagnosed with depression before the birth delivery were removed from the model used to predict the postpartum mood disorder.
[c]Individuals diagnosed with anxiety before the birth delivery were removed from the model used to predict the postpartum anxiety.
[d]Medications prescribed within 12 months before the delivery.
*$P < .05$; **$P < .01$.
Abbreviations: ADHD = attention-deficit/hyperactivity disorder, aHR = adjusted hazard ratio, OCD = obsessive-compulsive disorder.

## DISCUSSION

To our knowledge, this is the largest study of women with ADHD examined during the postpartum period. Findings point to enhanced adversity for women with ADHD at 6 weeks and 12 months postpartum, not only because of higher rates of postpartum mental health disorders relative to women without a diagnosis of ADHD but also because of younger age at delivery, as well as higher rates of preexisting physical and mental health conditions relative to women without ADHD. Importantly, even when controlling for demographic and clinical conditions identified prior to delivery, including co-occurring chronic health and mental health conditions, women with ADHD were at heightened risk for postpartum distress outcomes in the postpartum period relative to non-ADHD women. These findings are discussed herein.

In the acute postpartum period, women with ADHD reported higher rates of mood disorder, OCD, and stress-related disorders relative to women without ADHD. Similar effects emerged at the 12-month follow-up period, although rates of postpartum distress outcomes were higher at 12 months versus 6 weeks in both groups. The prevalence of stress-related disorders emerged prominently among women with ADHD, from 0.5% at 6 weeks to 27.3% by 12 months postpartum. Similarly, the prevalence of mood disorder increased from 13.2% at 6 weeks postpartum to 59.9% at 12 months postpartum in the ADHD group. Similar rates of depression have been reported among women with ADHD across the lifespan.[1,3] Longitudinal study following women from before pregnancy through the postpartum period is needed to clarify the extent to which the postpartum period represents a unique time of increased risk for distress in women with ADHD. However, it is likely that the rates of postpartum diagnoses identified herein provide an underestimation of the postpartum burden of women with and without ADHD. Lower diagnostic rates may emerge from EHRs, as clinicians may underreport or inconsistently identify diagnoses.[23] Indeed, rates of anxiety and OCD in the ADHD and non-ADHD groups were lower than rates reported in general population studies. Among women with postpartum distress, the majority were given only 1 diagnosis, which is surprising given very high rates of comorbidity between ADHD, depression, anxiety, and stress-related disorders reported in clinical samples.[13,24] It may be that only 1 diagnosis was prioritized and recorded in patient charts.

In addition to higher rates of postpartum distress, women with ADHD also reported higher rates of other stressors compared to women without ADHD, including preexisting mental and physical health concerns, such as diabetes, obesity/overweight, depression, anxiety, bipolar disorder, and substance use disorder. They were also younger than women without ADHD. These concerns have all been shown to increase risk for postpartum mood and anxiety disorders,[9–11] yet even with considering the effects of these co-occurring difficulties, ADHD was still significantly associated with postpartum depression at 6 weeks and at 12 months postpartum, and with anxiety and stress-related disorder at 12 months postpartum. As these analyses excluded women with a preexisting diagnosis of each respective outcome prior to delivery, these data suggest that the postpartum period contributes unique risk for women with ADHD.

Associations between ADHD and postpartum depression appear to be particularly robust, presumably because anxiety and OCD were less frequently identified in the sample. It may also be that clinicians are most likely to screen for and identify postpartum depression over other conditions. Major organizations, such as the American College of Obstetricians and Gynecologists (ACOG), US Preventative Services Task Force (USPSF), World Health Organization (WHO), and American Academy of Pediatrics (AAP), provide clear guidance for assessing postpartum depression, but recommendations for anxiety, OCD, and stress-related disorder are comparatively less widely disseminated.

Despite the high ecological validity and large sample size provided by EHRs, there are also limitations of this work. The results described herein may actually provide an underestimate of the risk for postpartum distress among women with ADHD for several reasons. First, data only reflect women who were at least 18 years old at delivery and identified with ADHD prior to delivery. Many women are not diagnosed with ADHD until later in development[24,25] but describe long histories of depression, anxiety, and stress-related disorders prior to diagnosis of ADHD that may enhance risk for postpartum distress. Second, ADHD has been associated with enhanced risk for adolescent pregnancy,[14,15] which is an established risk factor for postpartum distress outcomes.[10] Third, the ADHD group included more White non-Hispanic women relative to the non-ADHD group, which may also reflect potential biases in who receives a diagnosis of ADHD.[26] Relatedly, there is some evidence of racial and ethnic disparities in postpartum functioning, showing non-White, Hispanic women, on average to be at risk for earlier pregnancy and other health risks such as diabetes and obesity relative to White, non-Hispanic women.[27,28] There is no way to tell from EHRs whether ADHD was identified using best practices, documenting symptoms and impairment dating back to age 12 years. Lastly, additional factors that may be important to understanding and potentially mitigating postpartum distress outcomes, including social support and use of nonmedication therapy services, were not available to be considered.

Additional work focused on examining the potential mechanisms that underlie risk for postpartum outcomes among women with ADHD is needed. Emerging evidence suggests women with ADHD may be more sensitive to hormonal fluctuations that may occur during this time, which may place them at greater risk for postpartum depression and other distress outcomes.[29–31] Additionally, the new demands of parenting may further burden existing difficulties with sleep, executive functioning, emotion regulation, and social relationships and support. Further, it is critical to understand the long-term effects on parent, child, and family functioning for women with ADHD. Given the significant strain associated with ADHD in the acute and later postpartum period documented herein, screening for postpartum distress is critical for women with ADHD. Further, treatment guidelines to address the needs of women with ADHD during the postpartum period are needed. Stimulant medication is the primary treatment for adult ADHD,[32] yet women with ADHD may choose to discontinue stimulant medication in the postpartum period or, in some cases, may be counseled against using stimulant medication during pregnancy and in the postpartum period.[33] Antidepressant medication was associated with increased risk for depression and anxiety outcomes in the study and may therefore be insufficient as an intervention during this time. Nonmedication options may hold great benefit in mitigating postpartum distress among women with ADHD, particularly in the postpartum and prenatal periods when pharmacologic treatment may be associated with significant risk. Accumulating evidence shows benefits of cognitive-behavioral therapy for adults with ADHD[34,35] to address executive functioning difficulties, such as difficulties with time management, organization, and planning, as well as co-occurring depression and anxiety.[34,36]

## Article Information

**Published Online:** May 19, 2025. https://doi.org/10.4088/JCP.24m15724

**Submitted:** November 26, 2024; accepted February 26, 2025.

**To Cite:** Babinski DE, Riggle K, Tuan WJ. Postpartum distress among women with and without attention-deficit/hyperactivity disorder. *J Clin Psychiatry* 2025;86(3):24m15724.

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**Relevant Financial Relationships: Dr Babinski** has received research support from Supernus Pharmaceuticals, Inc unrelated to this work. The other authors report no relevant financial relationships.

**Funding/Support:** None.

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