Trajectories of Maternal Postpartum Depressive Symptoms

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abstract

OBJECTIVES: To identify homogenous depressive symptom trajectories over the postpartum period and the demographic and perinatal factors linked to different trajectories.

METHODS: Mothers (N = 4866) were recruited for Upstate KIDS, a population-based birth cohort study, and provided assessments of depressive symptoms at 4, 12, 24, and 36 months postpartum. Maternal demographic and perinatal conditions were obtained from vital records and/or maternal report.

RESULTS: Four depression trajectories were identified: low-stable (74.7%), characterized by low symptoms at all waves; low-increasing (8.2%), characterized by initially low but increasing symptoms; medium-decreasing (12.6%), characterized by initially moderate but remitting symptoms; and high-persistent (4.5%), characterized by high symptoms at all waves. Compared with the high-persistent group, older mothers (maximum odds ratio [OR] of the 3 comparisons: 1.10; 95% confidence interval [CI]: 1.05 to 1.15) or those with college education (maximum OR: 2.52; 95% CI: 1.36 to 4.68) were more likely to be in all other symptom groups, and mothers who had a history of mood disorder (minimum OR: 0.07; 95% CI: 0.04 to 0.10) or gestational diabetes mellitus diagnosis (minimum OR: 0.23; 95% CI: 0.08 to 0.68) were less likely to be in other symptom groups. Infertility treatment, multiple births, prepregnancy BMI, gestational hypertension, and infant sex were not differentially associated with depressive symptom trajectories.

CONCLUSIONS: One-quarter of mothers in a population-based birth cohort had elevated depressive symptoms in 3 years postpartum. Screening for maternal depression beyond the postpartum period may be warranted, particularly after mood and diabetic disorders.

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Dr Putnick conceptualized and designed the study, performed data analyses, and drafted the initial manuscript; Drs Sundaram, Ghassabian, Robinson, and Vafai provided critical feedback on the analytic plan; Drs Goldstein and Gilman conducted initial analyses; Drs Bell and Yeung conceptualized and designed the study, coordinated and supervised data collection, and provided critical feedback on the analytic plan; and all authors reviewed and revised the manuscript, approved the final manuscript as submitted, and agree to be accountable for all aspects of the work.

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WHAT'S KNOWN ON THIS SUBJECT: Many women experience elevated depressive symptoms in the postpartum period, and the American Academy of Pediatrics recommends that pediatricians screen for maternal depression at well-child visits up to 6 months postpartum.

WHAT THIS STUDY ADDS: Two groups containing >12% of women had elevated depressive symptoms past 6 months postpartum. Demographic and perinatal factors like low maternal age and education, history of mood disorders, and gestational diabetes place women at greater risk for persistent depressive symptoms.

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Recently, the American Academy of Pediatrics (AAP) recommended that primary care pediatricians screen for maternal depression at children's 1-, 2-, 4-, and 6-month well visits.[1] Once only a concern for mental health providers and obstetricians, maternal depressive symptoms are now firmly in the purview of pediatricians. Maternal depression increases children's risk of cognitive, emotional, and behavioral problems,[2–4] and treatment improves not only maternal symptoms but also child outcomes.[5] Although the *Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition*, attaches the diagnostic specifier "with peripartum onset" to depressive episodes that emerge during the 4 weeks after delivery,[6] this time window is likely too restrictive because trajectories of depressive symptoms vary widely.[7] The estimated prevalence of major depressive episodes among mothers in the postpartum period is 12.4%,[8] but up to one-quarter of postpartum mothers have high levels of depressive symptoms.[9] Consequently, identifying homogenous depressive symptom trajectories over the postpartum period as well as risk factors for different trajectories could help providers recognize the mothers at the highest risk for persistent symptoms.

In previous studies, researchers have found 3 to 6 distinct trajectories of depression[10–18]; common across studies is a low-stable group of mothers without significant depressive symptoms and high-stable group of mothers with chronic depressive symptoms. For example, Campbell et al[10] identified 6 trajectories of depressive symptoms from 1 month to 7 years postpartum in 1261 mothers, and Matijasevich et al[12] studied 3332 Brazilian women, finding 5 trajectories from 3 months to 6 years postnatally. Given the heterogenous samples, time periods studied (antenatal and postnatal ranging from 1 to 7 years after birth), and spacing between time points (a few months to several years), additional large-scale longitudinal cohort studies are needed.[18] Differentiating between the most common typologies of postpartum depressive symptoms has relevance for both clinical care and understanding the etiology of maternal depression.

There are many potential demographic and perinatal conditions that may increase the risk of more severe trajectories of postpartum depressive symptoms. Campbell et al[10] found that mothers in the low-stable group were more likely to be older, married, have higher education, and have a higher income-to-needs ratio than other groups. In the study by Denckla et al,[11] the low-stable group also had higher maternal and paternal education compared with their chronically depressed group. Demographic characteristics are important in helping providers recognize mothers at risk for depression, but factors surrounding the pregnancy itself may also be important. For example, Matijasevich et al[12] found that mothers with the lowest depressive symptoms were more likely to have planned pregnancies, mothers with increasing depression postnatally were more likely to have preterm infants, and mothers with high chronic depression were more likely to be multiparous than other groups.

In this study, we advance the literature by following a large cohort of mothers for 3 years postpartum and assessing the predictors of trajectory membership. To evaluate trajectories, maternal depressive symptoms were assessed at 4, 12, 24, and 36 months after childbirth. In addition, demographic and perinatal factors were assessed at 4 months postpartum and/or abstracted from medical records to identify mothers at risk for different developmental courses of depressive symptoms.

METHOD

Participants

The Upstate KIDS Study is a population-based birth cohort study (2008–2010) designed to evaluate the impact of infertility treatment on child growth and development through the age of 3 years.[19] By using birth certificates from the 57 counties in New York state, excluding the 5 New York City boroughs, infants were oversampled on infertility treatment, with all twins and higher-order multiples eligible to participate regardless of conception mode. The study cohort comprised 5034 mothers, including 1498 who had used some form of infertility treatment and 1129 mothers of multiple births (45 of whom birthed triplets or higher-order multiples). Most mothers (n = 4866; 97%) provided at least 1 assessment of depressive symptoms. Human subjects research approval was obtained from all participating institutions (New York State Department of Health Institutional Review Board 07-097; University at Albany 08-179), and informed consent was obtained before data collection.

Depressive Symptoms

Depressive symptoms were assessed by using the abridged 5-item Edinburgh Postnatal Depression Scale (EPDS-5), when infants were 4, 12, 24, and 36 months of age. The EPDS-5 has 5 items assessing emotional experiences over the past 7 days. Three of the 5 items included in the EPDS-5 are similar in content to the 5 excluded items from the 10-item Edinburgh Postnatal Depression Scale (EPDS).[20] For example, the excluded item "I have felt scared or panicky for no very good reason" is nearly identical to included item "I have been anxious or worried for no good reason." Unlike the 10-item version of the EPDS, the 5-item version does not include a question about suicidality, but this item has not been shown to

correlate strongly with the 10-item EPDS.[21,22] Items in the EPDS-5 are scored from 0 (no, never) to 3 (yes, most of the time), and items are summed to form a total score of depressive symptoms (range: 0–15). The EPDS-5 has been used to assess depressive symptoms in pregnant and postpartum women in various populations[23–25] and correlates strongly with the full EPDS (Pearson's r = 0.96),[22] and the brief 5-item format allows for rapid assessment. The internal consistency omega[26] of the 5 items ranged from 0.71 (95% confidence interval [CI]: 0.68 to 0.74) at 24 months to 0.79 (95% CI: 0.77 to 0.80) at 4 months.

Demographic and Perinatal Risk Factors

A baseline questionnaire at 4 months was used to assess demographic and perinatal factors, and hospital discharge records were abstracted to supplement maternal reports of perinatal conditions. Mothers reported their previous history of mood disorders (by endorsement of "has a doctor ever diagnosed you with a mood disorder"), education, marital status, race and ethnicity, and history of infertility treatment. When maternal reports were incomplete, responses were supplemented with vital records. Mothers' ages, prepregnancy BMI, parity, plurality, gestational age in weeks, gestational diabetes mellitus (GDM), gestational hypertension, and infant sex were primarily obtained from vital records and supplemented with maternal reports when necessary. For mothers of multiples, one infant was randomly selected to serve as the index child for infant sex. Education was dichotomized as less than college versus college degree or higher. Marital status was coded as married, civil union, or domestic partnership versus not. Race and/or ethnicity were coded as white and non-Hispanic versus other. Infertility treatment was coded as none versus any treatment, including ovulation induction, intrauterine insemination, and/or in vitro fertilization. Plurality was coded as singleton versus multiple.

Statistical Analysis

First, a linear latent growth model was fit in Mplus, version 8.2,[27] to determine if there was significant variance around the intercept and slope, which would suggest the presence of multiple groups with empirically distinct trajectories of depressive symptoms (see Supplemental Information). Next, the number of distinct trajectories of depressive symptoms was explored by using Asparouhov and Muthén's[28] 3-step method for latent class and growth mixture modeling. The 3-step method is used to (1) estimate latent classes with no predictors (which is identical to the unconditional model with no predictors in a traditional growth mixture model), (2) assign each participant to their most likely latent class group by using the posterior distribution obtained during the first step, and (3) regress class membership onto predictor variables by using multinomial logistic regression, taking into account the probabilistic nature of assigning class membership in the second step. On the basis of the overall favorable fit statistics of both the 3-step and conditional models and the stability of the class solution (similar class trajectories in the 3-step and conditional models; see Supplemental Information), the 4-class solution was determined to best fit the data. For all models, full-information maximum likelihood estimation (FIML)[29] was used to incorporate all observed data on the depressive symptom scores. FIML has been shown to work as well as multiple imputation in handling missing data.[30]

RESULTS

As is common in longitudinal studies, there was dropout over time,[31] with 30% of the 4866 mothers completing all 4 waves and 71% completing ≥2 waves (see Supplemental Information). There were few missing data points (0.35%) on the predictors because they were all collected at baseline, and these data were missing completely at random (Little's missing completely at random = 0.56, P = .756). Consequently, only cases with complete data on the predictors (n = 4693) were included in the multinomial logistic regression model.

Table 1 presents demographic and perinatal characteristics of the sample as well as the mean levels of depressive symptoms at 4, 12, 24, and 36 months after birth. Overall, mothers displayed relatively low levels of depressive symptoms, but the range was large. To illustrate, by using a cutoff score of ≥7 for the EPDS-5,[22] 11% of women were considered to have moderate depressive symptoms at 4 months, 8% at 12 months, 6% at 24 months, and 7% at 36 months, and 21% of women had moderate depressive symptoms at ≥1 time points.

We identified 4 longitudinal trajectories (Fig 1). The largest group was termed "low-stable" (n = 3637; 74.7%). These mothers began with low levels of symptoms (b-intercept = 1.55 EDPS points; 95% CI: 1.45 to 1.65) and remained low through all waves (b-slope = −0.01 points per 4 months; 95% CI: −0.01 to 0.03). The "low-increasing" group (n = 398; 8.2%) began with some depressive symptoms at 4 months (b-intercept = 3.73; 95% CI: 2.85 to 4.62) that increased across waves (b-slope = 0.38; 95% CI: 0.15 to 0.61). The "medium-decreasing" group (n = 613; 12.6%) began with higher depressive symptoms (b-intercept = 6.22; 95% CI: 5.51 to 6.94) and abated in symptoms over time (b-slope = −0.44; 95% CI: −0.62 to −0.26). Finally, the "high-persistent" group (n = 218; 4.5%) had the highest levels of depressive symptoms at 4 months

TABLE 1 Demographic and Perinatal Characteristics of the Sample and Average Depressive Symptoms Across Waves

	n	Mean (SD) or %	Range
Demographic			
Maternal age, y	4866	30.48 (6.05)	14–53
College educated	4866	51	0–1
Married or civil union	4735	77	0–1
Non-Hispanic white race and/or ethnicity	4866	81	0–1
Perinatal			
History of a mood disorder	4804	16	0–1
Infertility treatment	4866	30	0–1
Nulliparous	4830	46	0–1
Prepregnancy BMI	4859	27.13 (6.85)	13.87–70.71
GDM	4866	10	0–1
Gestational hypertension	4866	11	0–1
Smoking during pregnancy	4865	14	0–1
Plurality	4866	22	0–1
Gestational age, wk	4866	38.01 (2.53)	22–42
Infant sex, female	4866	48	0–1
Depressive symptoms			
4 mo	4694	2.73 (2.82)	0–15
12 mo	2962	2.42 (2.53)	0–15
24 mo	2366	2.26 (2.37)	0–15
36 mo	2131	2.37 (2.42)	0–14

(b-intercept = 9.83; 95% CI: 9.17 to 10.49), and, although symptoms decreased across waves (b-slope = −0.30; 95% CI: −0.44 to −0.17), they remained higher than other groups through 36 months.

Next, predictors of group membership were identified for the different courses of depressive symptomatology. Compared with the low-stable group (Table 2), mothers with a history of mood disorder diagnosis were >3 times as likely to belong to the medium-decreasing group (odds ratio [OR]: 3.67), 4 times as likely to belong to the low-increasing group (OR: 4.12), and 15 times as likely to belong to the high-persistent group (OR: 15.38). The high-persistent group was also markedly different from the low-stable group in other ways, tending to have been younger, less than college educated, unmarried, multiracial or a person of color, multiparous, diagnosed with GDM, and delivered earlier. Lastly, nulliparous mothers and mothers who smoked during pregnancy were more likely to be in the medium-decreasing than low-stable group.

To identify the risk factors associated with unremitting depressive symptoms, comparisons were made with the high-persistent group set as the reference (Table 3). The high-persistent group separated from the others in sociodemographics (ie, age and education) and by medical history (ie, mood disorders and GDM). Older mothers (ORs: 1.08–1.10) and mothers with a college education (ORs: 2.29–2.52) were more likely, and mothers with a mood disorder (ORs: 0.07–0.27) or GDM diagnosis (ORs: 0.23–0.44) were less likely to be classified in any other depressive symptom group than the high-persistent group. In addition, compared with the high-persistent group, mothers who smoked during pregnancy were more likely to be in the medium-decreasing group, and mothers who were nulliparous were more likely to be in the low-increasing group. A follow-up analysis was computed by using contrasts for mothers with no previous live births versus 1, 2, and ≥3 live births in place of nulliparity. The results were similar, indicating that having any number of previous live births increased the risk of being in the high-persistent symptom group compared with the low-stable group (data not shown).

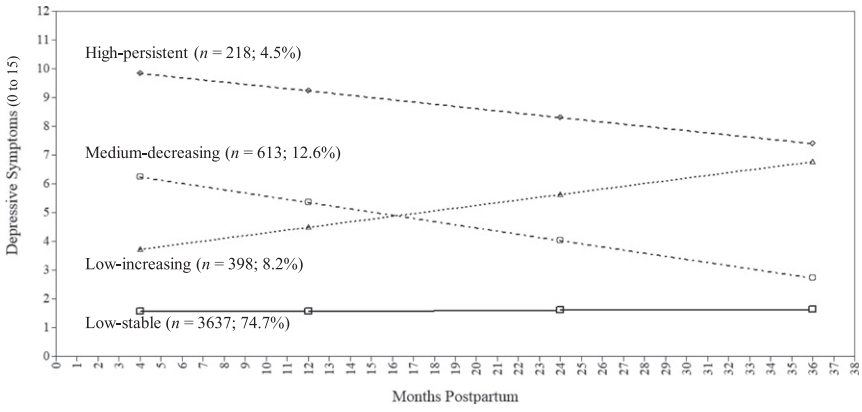

FIGURE 1
Estimated means of the 4-class solution of the latent class growth mixture model.

DISCUSSION

We identified empirically distinct trajectories of postpartum depressive symptoms in a population-based sample of mothers. Like other studies, we found a large low-stable group and a small persistently depressed group.[10–16] In addition, we found 2 other groups of mothers with initially low-level but increasing symptoms and initially medium-level but decreasing symptoms. Approximately one-quarter of women were assigned to groups with elevated symptoms at

TABLE 2 Demographic and Perinatal Predictors of Class Membership (n = 4693) Compared with Low-Stable Group

	Medium-Decreasing		Low-Increasing		High-Persistent[a]	
	OR	95% CI	OR	95% CI	OR	95% CI
Demographic						
Maternal age, y	0.99	0.96 to 1.02	0.99	0.95 to 1.04	0.91***	0.87 to 0.96
College educated	0.91	0.66 to 1.25	0.99	0.60 to 1.65	0.40**	0.21 to 0.74
Married or civil union	0.80	0.56 to 1.13	0.86	0.49 to 1.50	0.46**	0.29 to 0.72
Non-Hispanic white race and/or ethnicity	0.76	0.52 to 1.10	0.78	0.44 to 1.37	0.42***	0.27 to 0.67
Perinatal						
History of a mood disorder	3.67***	2.66 to 5.06	4.12***	2.57 to 6.60	15.38***	10.11 to 23.39
Infertility treatment	0.99	0.70 to 1.39	1.34	0.82 to 2.19	1.30	0.70 to 2.42
Nulliparity	0.68**	0.52 to 0.90	0.83	0.53 to 1.29	0.44***	0.29 to 0.68
Prepregnancy BMI	1.02	1.00 to 1.04	1.00	0.97 to 1.03	1.01	0.98 to 1.03
GDM	1.01	0.65 to 1.56	0.53	0.19 to 1.45	2.31**	1.36 to 3.90
Gestational hypertension	1.13	0.75 to 1.72	1.16	0.62 to 2.17	1.07	0.56 to 2.04
Smoking during pregnancy	2.48***	1.78 to 3.46	0.94	0.48 to 1.86	1.30	0.80 to 2.11
Plurality	0.89	0.60 to 1.32	0.91	0.49 to 1.72	1.19	0.72 to 1.95
Gestational age, wk	0.98	0.92 to 1.05	0.96	0.87 to 1.06	0.90**	0.84 to 0.97
Infant sex, female	1.26	0.97 to 1.65	0.75	0.49 to 1.16	0.97	0.66 to 1.42

[a] The high-persistent versus low-stable contrasts in Tables 2 and 3 are the same except that the ORs are presented in opposite directions.
** $P < .01$.
*** $P < .001$.

some point in the 3 years after birth. These findings may, if replicated, have significant implications for identifying mothers at risk for persistent symptomatology. For example, a small group of mothers with elevated symptoms at 4 months may be at risk for sustained, clinically significant symptoms that endure up to 3 years, but another larger group of mothers may screen relatively high at 4 months, and then remit over time. Likewise, a mother who initially appears to have low-level depressive symptoms at 4 months may remain at low risk or have increasing symptoms over 3 years. Elevated symptoms can last for years after birth, and at least 2 assessments separated by at least several months are needed to determine the trajectory of an individual mother's symptoms.

In this study, we also explored demographic and perinatal predictors of latent class trajectory membership. Understanding the factors that may identify women at risk for high-persistent depressive symptoms is important because women with depression experience comorbid medical problems[32,33] and struggle more with parenting and bonding with their children.[34,35] In this study, 2 factors distinguished mothers in the low-stable group versus groups with higher depressive symptoms initially or over time. Consistent with other studies, mothers with no history of mood disorder diagnosis were between 3 and 15 times more likely to be in the low-stable group than other groups.[13,36–38] Mothers who were having their first infant were also more likely to be in the low-stable group than the medium-decreasing and high-persistent groups. In 2 previous studies, researchers found that women with more previous live births were more likely to have high chronic levels of depressive symptoms than continuously low symptoms of depression,[12,14] but, in other studies, researchers have found no relations between parity and depressive symptoms[39] or, conversely, found that nulliparity increased the risk of depression.[40] In these studies, researchers defined parity differently (>2 previous pregnancies versus any previous live birth) and, in each study, adjusted for different factors (eg, only one adjusted for partner support and stressful life events[39]), which may explain the different findings.

One novel finding in this study was the particular risk associated with GDM on membership in the high-persistent symptom group. Women with GDM were more than twice as likely to be classified in the high-persistent group than all other trajectory groups. Previous studies also revealed that women who experience GDM may be at increased risk for postpartum depression,[41,42] even after prepregnancy weight is controlled for analytically,[43,44] but this is the first study to link GDM to persistent depressive symptoms up to 3 years postpartum. Some common-cause environmental factors for depression and diabetes include low socioeconomic status, poor sleep and diet, and inactivity, pointing to stress as a potential mechanism of this association.[45]

Infertility treatment, multiple births, prepregnancy BMI, gestational hypertension, and infant sex were not associated with depressive symptom trajectories. The existing literature on these factors is mixed. In most studies, researchers find no association between infertility treatment and postpartum depression,[39,46–49] although infertility before pregnancy is associated with depression.[50] Postpartum mothers conceiving with infertility treatment tend to be older and better-educated, which may correspond to better

TABLE 3 Demographic and Perinatal Predictors of Class Membership (n = 4693) Compared With High-Persistent Group

	Low-stable[a]		Medium-decreasing		Low-increasing	
	OR	95% CI	OR	OR	95% CI	OR
Demographic						
Maternal age, y	1.10***	1.05 to 1.15	1.08**	1.03 to 1.15	1.09**	1.03 to 1.16
College educated	2.52**	1.36 to 4.68	2.29*	1.11 to 4.72	2.51*	1.16 to 5.39
Married or civil union	2.19***	1.39 to 3.44	1.74	0.99 to 3.08	1.87	0.96 to 3.66
Non-Hispanic white race and/or ethnicity	2.35***	1.49 to 3.71	1.78	0.98 to 3.24	1.83	0.94 to 3.57
Perinatal						
History of mood disorder	0.07***	0.04 to 0.10	0.24***	0.14 to 0.40	0.27***	0.15 to 0.48
Infertility treatment	0.77	0.41 to 1.43	0.76	0.37 to 1.58	1.03	0.49 to 2.17
Nulliparity	2.25***	1.47 to 3.44	1.54	0.92 to 2.56	1.86*	1.04 to 3.32
Prepregnancy BMI	1.00	0.97 to 1.02	1.01	0.98 to 1.04	0.99	0.95 to 1.03
GDM	0.43**	0.26 to 0.73	0.44*	0.22 to 0.85	0.23**	0.08 to 0.68
Gestational hypertension	0.93	0.49 to 1.78	1.06	0.47 to 2.36	1.09	0.48 to 2.45
Smoking during pregnancy	0.77	0.47 to 1.25	1.91*	1.07 to 3.43	0.73	0.34 to 1.57
Plurality	0.84	0.51 to 1.39	0.75	0.40 to 1.41	0.77	0.36 to 1.66
Gestational age, wk	1.11**	1.03 to 1.19	1.09	0.99 to 1.19	1.07	0.95 to 1.20
Infant sex, female	1.03	0.71 to 1.51	1.31	0.82 to 2.09	0.78	0.45 to 1.33

[a] The low-stable versus high-persistent contrasts in Tables 2 and 3 are the same except that the ORs are presented in opposite directions.
* $P < .05$.
** $P < .01$.
*** $P < .001$.

support and lower the likelihood of postpartum depression. However, multiple births occur more often in mothers who used infertility treatment than those conceiving naturally, and that may increase the likelihood of depression.[51] In a systematic review of 7 studies, researchers concluded that multiple births is a risk factor for postpartum depressive symptoms,[51] but 6 of the 7 studies included <200 women with multiple births, and, in 3 of the 7, researchers found no association between multiple births and depression. The null findings for infertility treatment and multiple births in this study are important given the large samples and controls for other relevant perinatal factors.

No characteristics predicted membership in the low-increasing group relative to the low-stable group apart from history of a mood disorder. Risk factors that occur or worsen after birth may be more important for predicting increasing symptoms. For example, it is possible that women who have infants with health complications or developmental delays or women who experience marital strain or other stressors after childbirth are at a greater risk for increasing depressive symptoms. In 2 other studies, researchers that identified groups of women with increasing depressive symptoms over time found only self-rated poor maternal health[52] and preterm birth[12] to predict membership in these groups. Future studies should include more postnatal child and family factors to explore how these conditions predict depression trajectories.

This study's strengths include the large sample, long-term follow-up, and recruitment of women of varied sociodemographic backgrounds with and without infertility treatment and multiple births. The limitations of this study should be acknowledged. First, this study was not designed to diagnose postpartum depression. Hence, the measure of depressive symptoms was not a clinical measure and was brief (5 questions). It is possible that longer or more clinical measures of depression might produce different trajectory groups and predictors of those groups. Still, this brief measure discriminated 4 trajectories of symptoms, and pediatricians are likely to use brief screeners in clinical care.[53] Second, the sample was predominantly non-Hispanic white, and, to have adequate variance, all other racial and ethnic groups were combined in the analysis. Third, in this study, we did not collect data before 4 months postpartum and, therefore, may have missed some important information about early postpartum symptoms. Fourth, we cannot rule out that choosing to participate in a study may itself have selected for women with fewer depressive symptoms, but the prevalence of at least moderate depressive symptoms at 4 months postpartum in this sample (EPDS-5 ≥7; 11%) was similar to the population prevalence of a major depressive episode in the postpartum period (12%).[8,54] Finally, we do not know which women received treatment of depressive symptoms, which may have altered their trajectories.

CONCLUSIONS

Pediatric primary care clinicians should be aware of the different trajectories of postpartum depressive symptoms and the possibility that

elevated symptoms can persist for at least 3 years postpartum. This study reveals that assessing depression only once or too early in the postpartum period (ie, at 6 months or earlier, as recommended by the AAP[1]) may make it difficult to discern the future course. Evidence suggests that a large percentage of mothers with depression do not seek treatment.[55,56] Many women hope that symptoms will abate over time without treatment.[57] Assessing mothers multiple times early and late in the postpartum period and extending the postpartum period to at least 2 years after birth would provide a clearer picture of mothers whose symptoms are persisting or increasing, and mothers who had not already sought treatment could be connected with resources.

Pediatricians should also pay particular attention to women who exhibit risk factors for depression. Women with a history of mood disorder are at increased risk for initially high and persistent depressive symptoms, medium-level symptoms that abate, and increasing symptoms up to 3 years after the birth of their child, relative to women who have low-stable symptoms. Young mothers and those without college education as well as women who had GDM may also be at particular risk for high-persistent depressive symptoms, compared with all other trajectories. It is important to note that pediatricians may not have easy access to the mother's perinatal history because this information is generally stored in the mother's and not the child's medical record. Consequently, pediatricians may have to ask the mother more questions to assess these factors. In a national survey of pediatricians' perceived responsibilities for identifying and treating maternal depression (conducted before the release of the AAP screening recommendations), >70% of pediatricians stated that there was insufficient time to obtain the mother's history and provide counseling and education about maternal depression.[58] Routine well-child visits may need to be extended for pediatricians to have the time to assess the mother's mental health and risk factors, in addition to the child's health and development. Mothers' mental health is critical to children's well-being and development.

ABBREVIATIONS

AAP: American Academy of Pediatrics
CI: confidence interval
EPDS: Edinburgh Postnatal Depression Scale
EPDS-5: 5-item Edinburgh Postnatal Depression Scale
FIML: full-information maximum likelihood estimation
GDM: gestational diabetes mellitus
OR: odds ratio

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