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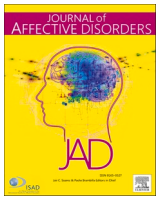

Research paper

Racial, ethnic, and nativity disparities in elevated symptoms and diagnosis of perinatal mood and anxiety disorders: A population-level study

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ABSTRACT

Background: This study evaluated racial, ethnic, and nativity disparities in diagnosis of perinatal mood and anxiety disorders (PMADs) for individuals with elevated symptoms in a state with universal screening of perinatal depression.

Methods: This was a cross-sectional analysis of linked New Jersey birth records and hospital discharge records between January 2016 and December 2019 (n = 338,537 births). Primary outcomes were a positive screen for elevated symptoms using the Edinburgh Postnatal Depression Scale (EPDS ≥ 10) and positive EPDS with a PMAD diagnosis on the delivery hospitalization discharge record. Logistic regression was used to estimate associations between racial, ethnic, and nativity groups and outcomes. We also examined associations between screening and diagnosis outcomes at delivery and postpartum use emergency department (ED) use.

Results: Compared with White US-born, births to Asian/Pacific Islander foreign-born mothers had significantly higher odds of positive EPDS (adjusted OR 1.84, 95%CI 1.73–1.96), but lower odds of positive EPDS with PMAD diagnosis (AOR 0.36 95%CI 0.29–0.45). Similar differences were found for Black US-born, Black foreign-born, Hispanic US-born, and White foreign-born births. Compared to those with a negative screen, a positive screen without a diagnosis was associated with higher odds of a psychiatric ED visit in the first year postpartum (AOR 2.23, 95%CI 1.99–2.51).

Conclusion: This population-level study found that in a setting with universal screening of perinatal depression, there remain substantial racial and ethnic disparities in the pathway from screening to diagnosis. Further research is needed to understand the mechanisms behind these findings and identify policies to improve equity in perinatal mental health care.

1. Introduction

Perinatal mood and anxiety disorders (PMADs), defined as mental health disorders experienced during or after pregnancy, are debilitating conditions with significant short- and long-term consequences for the health and wellbeing of pregnant individuals and their children, including preventable maternal mortality, adverse birth outcomes, adverse child developmental effects, and increased health care costs (Bauer et al., 2016; Dagher et al., 2020; Ding et al., 2014; Rokicki, 2024; Trost et al., 2022; Wisner et al., 2024). Rates of perinatal depression are particularly high for non-Hispanic Black, American Indian/Alaska native, and Asian/Pacific Islander populations, with 18–22% of individuals in these groups reporting postpartum depressive symptoms compared to 11% of White individuals (Bauman, 2020). Additionally, nativity (defined by whether an individual is foreign-born or US-born) is risk factor for perinatal depression: foreign-born women experience 2–4 times the risk of perinatal depression as US-born women, although risk varies by race and ethnicity as well as duration of residence in the United States (Falah-Hassani et al., 2015; Kelly-Taylor et al., 2025). Anxiety disorders during the perinatal period are common, with prevalence of having at least 1 or more anxiety disorder in pregnancy or postpartum estimated to be 21%; more than a quarter of women with perinatal anxiety have comorbid depression (Fawcett et al., 2019; Venkatesh et al., 2016). The limited available evidence on racial and ethnic differences in perinatal anxiety suggests that non-Hispanic Black and Hispanic individuals have higher risk of comorbid depression/anxiety

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during pregnancy and postpartum (Sujan et al., 2023).

Despite the growing burden of perinatal mental health disorders, rates of clinical recognition and treatment remain low (Cox et al., 2016a; Declercq et al., 2022; Khadka et al., 2024). While not all women who screen positive for depressive symptoms warrant a diagnosis, a systematic review found that only a third of women with postpartum depression and half of women with antenatal depression are diagnosed, much lower than the sensitivity of screening tools (Cox et al., 2016b; Levis et al., 2020). Moreover, among those with perinatal depression, individuals from historically marginalized communities are significantly less likely to report receiving any mental health care or treatment in the postpartum period (Avalos et al., 2023; Boama-Nyarko et al., 2024; Haight et al., 2024; Huang et al., 2007). While antenatal and postpartum screening for perinatal anxiety disorder is also recommended, it is less common, and there is limited evidence on rates of treatment for perinatal anxiety (ACOG, 2023; Fairbrother et al., 2019). However, studies have found that among those with anxiety symptoms in the general population, Black individuals and those experiencing socioeconomic disadvantage are less likely to receive an anxiety disorder diagnosis (Vanderminden and Esala, 2019).

Studies have examined a range of barriers to detection and treatment of PMADs among racial and ethnic minority groups, often attributing these gaps to individual-level barriers such as language barriers, limited awareness, and cultural stigma, and clinician-level barriers such as limited time and inadequate mental health training (Dagher et al., 2020; Firth et al., 2022; Hsieh et al., 2021; Lara-Cinisomo et al., 2018; Moore et al., 2021; Rokicki et al., 2023). Universal screening programs have been promoted as a way of overcoming many of these barriers and reduce disparities in screening and clinical recognition of PMAD (Declercq et al., 2022; Learman, 2018). Since 2000, 10 states have passed legislation requiring perinatal depression screening, with New Jersey the first state to mandate screening (Policy Center for Maternal Mental Health, 2024). Some research has found that universal screening significantly increases screening and treatment rates (Avalos et al., 2016; Miller et al., 2019). However, few studies have examined the extent to which universal screening can reduce racial and ethnic disparities in diagnosis and treatment (Kozhimannil et al., 2011).

In this study, we leverage unique population-level linked data from New Jersey to examine racial, ethnic, and nativity disparities in elevated symptoms and diagnosis of PMAD. New Jersey requires licensed health care professionals providing postpartum care, including physicians and midwives, to screen individuals for depressive symptoms during the delivery hospitalization, and the result of the screen is recorded on the birth record (Kozhimannil et al., 2011; Rokicki, 2024). Because screening is universal (>92% of births have a valid screen) and nearly all births occur in a hospital in New Jersey, we have high quality data on depressive symptoms for nearly the full population of individuals giving birth. We linked these data with hospital discharge records, which provide data on documentation of diagnosis of mental health conditions at delivery and in the postpartum year. We examined gaps in the likelihood of receiving a PMAD diagnosis among those with a positive screen on the Edinburgh Postnatal Depression Scale (EPDS). While not everyone who has a positive EPDS screen will require a mental health diagnosis, we are interested in the differences in documented diagnosis for those with elevated symptoms across race, ethnicity, and nativity. We also examined the consequences of possible unrecognized mental health needs (elevated symptoms without diagnosis), as measured by risk of psychiatric visits to the emergency department (ED) in the postpartum year.

2. Methods

2.1. Study population

We used data from NJ birth records linked with NJ Uniform Billing Hospital Discharge records between January 1, 2016 and December 31, 2019 (New Jersey Birth Data, n.d.; New Jersey Hospital Discharge Data Collection System, n.d.). Linking was conducted using a probabilistic match based on a set of personal identifiers including name, date of birth, gender, address, plurality of birth (singleton, twin, or other multiple birth), medical record id and variations of these fields. Our eligibility criteria were women who had a live birth between January 1, 2016 and December 31, 2019. If women had multiple pregnancies during this period, all live births were included. We then excluded non-singleton births (3.2%), births to women who did not reside in NJ (2.8%), births with a missing or invalid EPDS score (7.7%) or missing information on primary payer at delivery (0.9%), and births in which more than one birth occurred to the same woman within the same calendar year (0.1%) as these were likely due to inaccurate data. Finally, we included those in the birth records who were successfully matched to a discharge record indicating a delivery, which was achieved for 96% of eligible births. Appendix Fig. 1 shows the flowchart for the analytical sample. Of all singleton births to mothers residing in NJ, 87% were included in the analysis.

2.2. Exposure of interest

Our exposure variable of interest was race, ethnicity, and nativity, which was coded in one combined variable because of the large disparities in prevalence of PMADs by race, ethnicity, and nativity (Huang et al., 2007). This resulted in 9 mutually exclusive categories with all groups non-Hispanic unless identified as Hispanic: White US-born, White foreign-born, Black US-born, Black foreign-born, Hispanic US-born, Hispanic foreign-born, Asian/Pacific Islander (PI) US-born, Asian/PI foreign-born, and Other which included American Indian/Alaska native, multi race and those missing information on race or nativity, due to small samples in these groups. We do not show results for Other race due to small sample size. Appendix Table 2 shows details of how groups were categorized.

2.3. Outcomes

A positive EPDS screen was defined as an EPDS score greater than or equal to 10. The EPDS was administered after delivery but before discharge from the hospital. It is available in Spanish for individuals who use Spanish as their primary language. The score, ranging from 0 to 30, is recorded on the NJ birth record. We used a cutoff score of 10 based on clinical guidelines, as a score at or above this cutoff is considered a positive screen for risk of depression and initiates protocols for clinical evaluation in NJ hospitals (ACOG, 2023; Cox et al., 1987; Farr et al., 2014; Wisner et al., 2002). While the EPDS is usually administered 6–12 weeks after delivery, ideal timing has not been established and previous studies have found that scores in the immediate postpartum are predictive of depressive symptoms up to four months postpartum (Dennis, 2004; Marín-Morales et al., 2018; Smithson et al., 2022).

Diagnosis of PMAD was defined as an ICD-10 diagnosis code for depressive disorder (F32x, F33x, F53x, O99.34) or anxiety disorder (F40x, F41x) during the delivery hospitalization. The full list of codes is provided in Appendix Table 1. While an EPDS score ≥ 10 is validated for detecting depression, we also included anxiety disorders to reflect the range of PMAD diagnoses that may arise following clinical evaluation after a positive screen, as individuals with elevated symptoms may ultimately receive anxiety diagnoses (Ayers et al., 2016; Rowe et al., 2008). Grouping these conditions allows us to capture clinically recognized mental health need among symptomatic individuals. Our outcome was defined as a positive EPDS screen with receipt of a PMAD diagnosis during the delivery hospitalization. We also conduct sensitivity analysis with diagnosis limited to depressive disorders.

Lastly, we assessed use of the emergency department (ED) in the postpartum period. Following the Healthcare Cost and Utilization Project criteria, revenue and procedure codes were used to identify ED visits in the hospital discharge data that occurred between discharge

from the delivery hospitalization and 365 days postpartum (Appendix Table 1). Three binary outcomes were examined, measured in the first year postpartum: any ED visit, a psychiatric ED visit (defined as any ICD-10 codes related to psychiatric disorder), and an ED visit with a primary PMAD diagnosis. Details of ICD-10 codes are in Appendix Table 1.

2.4. Covariates

As covariates, we included socioeconomic, infant, and maternal health characteristics associated with risk of PMAD. Because the EPDS was administered during the delivery hospitalization, we also considered elevated symptoms to potentially be linked to birth trauma and maternal and infant complications (Ayers et al., 2016; Silverman et al., 2017; Waller et al., 2022). We thus first controlled for a range of socioeconomic factors predictive of PMAD (Dagher et al., 2020; Yang et al., 2022), including: primary language (English, Spanish, or other), primary payer for the delivery (commercial insurance, Medicaid, or uninsured), maternal age (<20, 20–29, 30–39, 40+), maternal and paternal education (high school degree or less vs at least some college or more), marital status (ever married), primiparity, maternal smoking during or before pregnancy, prenatal care in the first trimester, WIC participation during pregnancy, and diagnosis of alcohol or substance use disorder during the delivery. We then also controlled for infant and maternal health factors related to the childbirth experience and outcomes (Baldini et al., 2025; Silverman et al., 2017; Waller et al., 2022), including low birthweight (<2500 g), low Apgar score at 1 min (<5), preterm birth (<37 weeks gestation), admission to the neonatal intensive care unit (NICU), any neonatal complication, death of infant in hospital, delivery route (vaginal or Cesarean), hypertensive disorders of pregnancy, blood loss >1000 mL, transfusion, infection, shoulder dystocia, and severe maternal morbidity (SMM). As mental health history is highly predictive of perinatal depression (Silverman et al., 2017; Yang et al., 2022), we controlled for a mental health diagnosis (in any diagnosis field) during an ED visit in the prenatal period. Unfortunately, we did not have outpatient data to identify outpatient mental health visits or use of psychotropic medication in the prenatal period. Finally, we controlled for year of delivery to adjust for underlying trends in prevalence of depression (Goodwin et al., 2022). For individuals that contributed multiple births to the analysis, all delivery-level covariates were based on data from each respective birth. Detailed definitions including ICD codes and data sources for all covariates are shown in Appendix Table 2.

2.5. Analysis

First, using unadjusted linear regression models, we calculated the predicted probabilities of having a positive EPDS screen and the predicted probabilities of having a positive screen and receiving a PMAD diagnosis, by race, ethnicity, and nativity. Next, we used logistic regression models to estimate the adjusted associations between race-ethnicity-nativity and positive EPDS and positive EPDS with receipt of diagnosis, controlling for all covariates. Finally, we used logistic regression to examine the relationship between screening and diagnosis at delivery (categorized as negative EPDS, positive EPDS without diagnosis, and positive EPDS with diagnosis) and postpartum use of the ED. We restricted this analysis to births prior to 2019 to allow for a full postpartum year of data for all individuals. All logistic regression results are reported as odds ratios (ORs) with 95% confidence intervals. We clustered the standard errors at the individual level to account for non-independence in observations (as some women had more than one birth during the study period) (Rokicki et al., 2018). For missing information on covariates, we included separate indicators for unknown. We reported 2-sided P values throughout and $P < 0.05$ indicated statistical significance.

We conducted several robustness checks. First we used a higher cut-off for the EPDS (greater than or equal to 13) for our outcomes, as this cut-off more reliably indicates that the presence of syndromal perinatal depression (Levis et al., 2020). Second, because EPDS≥ 10 is only validated to detect possible depression, we limited our diagnosis outcome to ICD codes indicating depressive disorder, rather than the full list of PMAD codes. Third, to eliminate the within-individual correlation, we included only one birth per woman, choosing a birth at random if a woman had more than one in the study period. Fourth, to examine only new onset mental health disorders, we restricted the analysis to individuals who did not receive a psychiatric diagnosis during an ED visit in the prenatal period. Finally, to reduce correlation in our explanatory variables, we examined a more parsimonious regression model that was limited to demographic covariates.

We recognize that not all birthing people identify as women or mothers; however, we do not have information on gender identity in the data. Analysis was conducted using Stata v18. Institutional review board approval was obtained from Rutgers University Institutional Review Board.

3. Results

The study population consisted of 338,537 births among 298,607 women during the study period of 2016–2019. Table 1 shows the characteristics of the sample. Among births, 1.4% were Asian/PI US-born, 9.2% were Asian/PI foreign-born, 10.4% were Black US-born, 3.6% were Black foreign-born, 12.1% were Hispanic US-born, 17.4% were Hispanic foreign-born, 38.7% were White US-born, 5.3% were White foreign-born, and 1.8% were other race. Among those with positive EPDS screens, Asian/PI foreign-born, Black native-born and Black foreign-born were overrepresented. Among births with positive EPDS, 18.7% received a PMAD diagnosis and 12.0% received a depression diagnosis.

Fig. 1 shows the percentage of births to mothers with positive EPDS screens, and among these, the percentage with a PMAD diagnosis on the delivery record, from unadjusted models. Prevalence of elevated symptoms (positive EPDS screen) was significantly higher among births to Asian/PI foreign-born (5.1%), Black US-born (5.5%), Black foreign-born (5.6%), and Hispanic US-born (4.0%), compared to White US-born (3.1%), Asian/PI US-born (3.2%), White foreign-born (3.4%), and Hispanic foreign-born (3.3%). Among those with positive screens, the percentage who received a PMAD diagnosis varied by race, ethnicity, and nativity, with the lowest rates among births to Asian/PI foreign-born (5.9%) and Black foreign-born (5.4%) mothers, while the highest rate was among births to White US-born (32.3%) mothers (Appendix Table 3).

Fig. 2 and Table 2 show the associations between race-ethnicity-nativity and odds of positive EPDS screen and odds of positive EPDS screen with receipt of diagnosis, controlling for all covariates. Compared with births to White US-born mothers, odds of positive EDPS were significantly higher for births to Asian/PI foreign-born (OR 1.84, 95% CI 1.73–1.96), Black US-born (OR 1.27, 95% CI 1.19–1.36), Black foreign-born (OR 1.56, 95% CI 1.43–1.71), Hispanic US-born (1.09, 95% CI 1.02–1.16), and White foreign-born (OR 1.16, 95% CI 1.06–1.27) mothers. All race-ethnicity-nativity groups had significantly lower odds of a positive EPDS with a PMAD diagnosis compared with White US-born mothers, including Asian/PI foreign-born (OR 0.36, 95%CI 0.29–0.45) and Black foreign-born (OR 0.33, 95%CI 0.24–0.45). Primary language of Spanish was associated with lower odds of positive EPDS with diagnosis (0.74, (0.57–0.96)) but was not significantly associated with positive EPDS (0.94, (0.86–1.02)) (Appendix Table 4).

Other factors were aligned in the direction and magnitude of the odds for positive EPDS and positive EPDS with PMAD diagnosis. For example, births with the following characteristics had significantly higher odds of both positive EPDS and of positive EPDS with diagnosis: mothers aged 40 and over, unmarried mothers, unknown father's education, mothers who smoked before or during pregnancy, alcohol or substance diagnosis, mothers with prenatal mental health diagnosis,

Table 1
Characteristics of births.

	Positive EPDS screen		
	Total	No	Yes
	n = 338,537	*n* = 325,564 (96.2%)	*n* = 12,973 (3.8%)
Race-ethnicity-nativity[a]			
Asian/PI US-born	4854 (1.4%)	4701 (1.4%)	153 (1.2%)
Asian/PI foreign-born	31,161 (9.2%)	29,574 (9.1%)	1587 (12.2%)
Black US-born	35,117 (10.4%)	33,198 (10.2%)	1919 (14.8%)
Black foreign-born	12,250 (3.6%)	11,570 (3.6%)	680 (5.2%)
Hispanic US-born	41,060 (12.1%)	39,422 (12.1%)	1638 (12.6%)
Hispanic foreign-born	59,068 (17.4%)	57,124 (17.5%)	1944 (15.0%)
White US-born	130,932 (38.7%)	126,813 (39.0%)	4119 (31.8%)
White foreign-born	18,003 (5.3%)	17,386 (5.3%)	617 (4.8%)
Other	6092 (1.8%)	5776 (1.8%)	316 (2.4%)
Mother's language			
English	299,380 (88.4%)	287,879 (88.4%)	11,501 (88.7%)
Spanish	32,813 (9.7%)	31,700 (9.7%)	1113 (8.6%)
Other	6344 (1.9%)	5985 (1.8%)	359 (2.8%)
Primary payer			
Commercial	203,359 (60.1%)	196,538 (60.4%)	6821 (52.6%)
Medicaid	107,550 (31.8%)	102,617 (31.5%)	4933 (38.0%)
Uninsured	27,628 (8.2%)	26,409 (8.1%)	1219 (9.4%)
Maternal age			
Under 20	10,088 (3.0%)	9567 (2.9%)	521 (4.0%)
20–29	130,155 (38.4%)	125,117 (38.4%)	5038 (38.8%)
30–39	180,231 (53.2%)	173,623 (53.3%)	6608 (50.9%)
40+	15,583 (4.6%)	14,881 (4.6%)	702 (5.4%)
Unknown	2480 (0.7%)	2376 (0.7%)	104 (0.8%)
Maternal education - high school or less	117,965 (34.8%)	112,873 (34.7%)	5092 (39.3%)
Paternal education - high school or less			
No	182,920 (54.0%)	176,632 (54.3%)	6288 (48.5%)
Yes	130,695 (38.6%)	125,740 (38.6%)	4955 (38.2%)
Unknown	24,922 (7.4%)	23,192 (7.1%)	1730 (13.3%)
Maternal marital status (ever married)	226,615 (66.9%)	219,007 (67.3%)	7608 (58.6%)
Maternal parity (parous)	205,527 (60.7%)	197,914 (60.8%)	7613 (58.7%)
Maternal smoking before/ during pregnancy	22,091 (6.5%)	20,463 (6.3%)	1628 (12.5%)
Prenatal care in first trimester	273,617 (80.8%)	263,826 (81.0%)	9791 (75.5%)
Participated in WIC	75,049 (22.2%)	71,580 (22.0%)	3469 (26.7%)
Any prenatal mental health ED visit	5334 (1.6%)	4631 (1.4%)	703 (5.4%)
Alcohol/substance use at delivery	8264 (2.4%)	7390 (2.3%)	874 (6.7%)
Vaginal delivery	224,347 (66.3%)	216,786 (66.6%)	7561 (58.3%)
Hypertensive disorders	23,462 (6.9%)	22,228 (6.8%)	1234 (9.5%)
Maternal hemorrhage (>1000 mL)	10,213 (3.0%)	9660 (3.0%)	553 (4.3%)
Transfusion (birth record)	2125 (0.6%)	1967 (0.6%)	158 (1.2%)
Infection	1164 (0.3%)	1106 (0.3%)	58 (0.4%)
Shoulder dystocia	4229 (1.2%)	4075 (1.3%)	154 (1.2%)
SMM	1838 (0.5%)	1702 (0.5%)	136 (1.0%)
Infant admitted to NICU	32,164 (9.5%)	29,919 (9.2%)	2245 (17.3%)
1-min Apgar <5	7213 (2.1%)	6693 (2.1%)	520 (4.0%)
Low birth weight	19,820 (5.9%)	18,442 (5.7%)	1378 (10.6%)
Preterm birth	25,204 (7.4%)	23,610 (7.3%)	1594 (12.3%)
Any neonatal diagnosis	21,574 (6.4%)	19,954 (6.1%)	1620 (12.5%)
Child died	385 (0.1%)	321 (0.1%)	64 (0.5%)
Positive EPDS and PMAD diagnosis	2426 (0.7%)	0 (0.0%)	2426 (18.7%)
Positive EPDS and depression diagnosis	1563 (0.5%)	0 (0.0%)	1563 (12.0%)

Notes: EPDS = Edinburgh Postnatal Depression Scale. Positive EPDS screen defined as ≥10. ED = emergency department. NICU = neonatal intensive care unit. PMAD = Perinatal mood and anxiety disorder.

[a] For race-ethnicity-nativity, all groups are non-Hispanic unless identified as Hispanic.

admitted to the NICU, Cesarean delivery, mothers with hypertensive disorder, mothers with high blood loss, and with mothers who underwent transfusion. Odds ratios for the full list of covariates are shown in Appendix Table 4.

Table 3 shows the associations between screening and diagnosis outcomes at delivery and odds of ED visits in the first year postpartum. Compared to births to mothers with a negative EPDS screen, a positive EPDS screen but no PMAD diagnosis on the delivery hospitalization record was associated with significantly higher odds of any postpartum ED visit (OR 1.31, 95%CI 1.24–1.38), a postpartum psychiatric ED visit (OR 2.23, 95%CI 1.99–2.51), and a postpartum ED visit with a primary diagnosis of PMAD (OR 2.02, 95%CI 1.64–2.49). Births to mothers with a positive EPDS who received a PMAD diagnosis at delivery also had higher odds of postpartum ED use, with 4.96 times the odds of a psychiatric ED visit (95%CI 4.17–5.90), compared to births to mothers with a negative EPDS screen.

Results were consistent across all sensitivity analyses, including considering depression ICD codes only in the outcome of EPDS with diagnosis (Appendix Table 4), using the EPDS cutoff of 13 or above (Appendix Table 5), limiting observations to one birth per woman, limiting to births to women without prenatal psychiatric ED visits, and using fewer control variables (Appendix Table 6). In all robustness checks, births to Asian/PI foreign-born and Black foreign-born mothers had the highest odds of elevated symptoms and approximately half the odds of elevated symptoms with a diagnosis, compared to births to White US-born mothers.

4. Discussion

In this study of population-level data from New Jersey, a state with universal screening of perinatal depression, we found significant disparities in provider diagnosis of perinatal mental health disorders by race, ethnicity, and nativity. Compared with White US-born women, Black US-born, Black foreign-born, Hispanic US-born, Asian/PI foreign-born, and White foreign-born women had significantly higher odds of elevated symptoms but significantly lower odds of a PMAD diagnosis. We also found that primary language had a significant negative association with diagnosis, although no significant association with symptoms. While it is not known what proportion of women with elevated

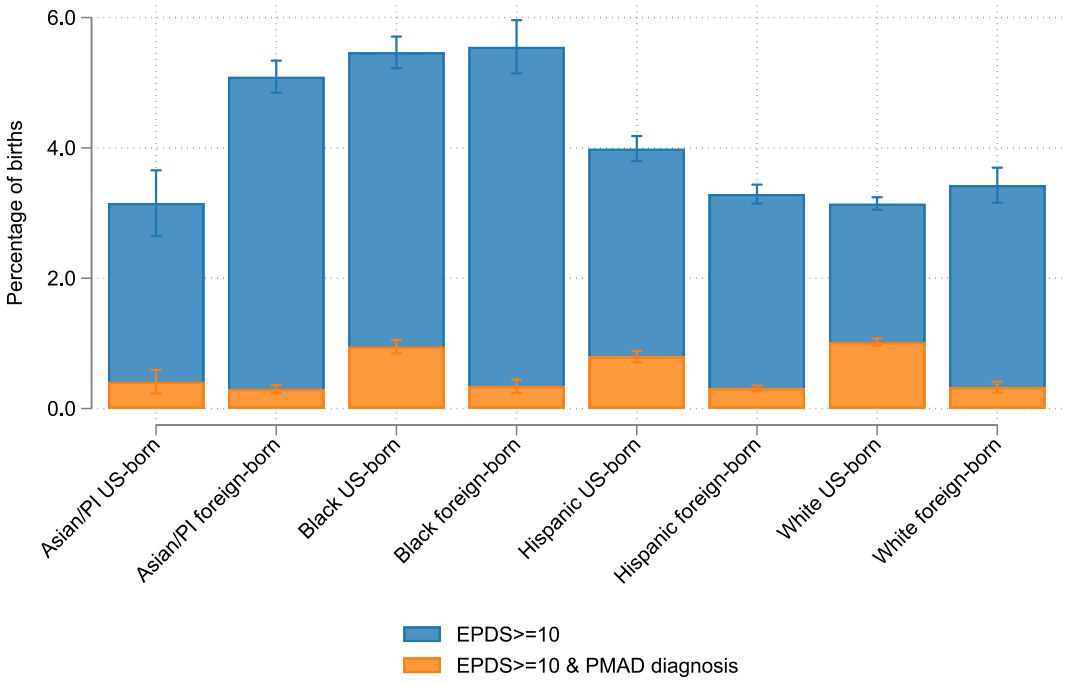

Fig. 1. Percentage of births with EPDS ≥ 10 and percentage of births with EPDS ≥ 10 who received PMAD diagnosis, by race, ethnicity, and nativity.
Notes: PMAD diagnosis defined as ICD-10 code for depressive disorder or anxiety disorder during delivery hospitalization (see Appendix Table 1 for full list of ICD codes). 95% confidence intervals shown. Results from predicted margins of unadjusted linear models, with standard errors clustered at woman level. PMAD = Perinatal mood and anxiety disorder.

symptoms in this population should have received a PMAD diagnosis, the differences in diagnosis rates we found by race, ethnicity, and nativity strongly suggest under-recognition and under-treatment of PMAD among minority groups. Moreover, we found that individuals who screened positive but did not receive a depression or anxiety diagnosis at delivery were significantly more likely than those who screened negative to have a postpartum psychiatric ED visit, providing evidence that failure to complete a diagnostic evaluation in those with positive EPDS screens contributes to under-treatment and has significant health consequences.

We conducted our study in New Jersey, where universal screening for maternal depression during the delivery hospitalization has been mandated since 2006. Screening rates have been consistently greater than 90% since implementation of the policy, providing us with population-level data on perinatal depression (Farr et al., 2014). New Jersey is also a highly racially and ethnically diverse state with one of the highest percentages of foreign-born individuals, making it an ideal setting to explore disparities at the intersection of race, ethnicity and nativity (New Jersey Department of Health, 2021). We found significant gaps in clinical recognition of PMAD symptoms within and across these groups, with the largest gaps among Asian/PI foreign-born and Black foreign-born populations. These disparities persisted after controlling for a wide range of socioeconomic factors (including language, education, insurance, and substance use), and infant and maternal complications (including preterm birth, low birth weight, NICU admission, hemorrhage, blood transfusion, and SMM), indicating that differences in these factors do not explain the observed racial and ethnic disparities in diagnosis.

Our results are consistent with two smaller studies on disparities in provider identification of perinatal depression. One study found racial and ethnic disparities in the percentage of respondents reporting postpartum depressive symptoms who also reported being told by a health care provider that they had postpartum depression (Ehntholt et al., 2025). Another found Black-White disparities in receipt of screening and treatment recommendation when a positive screen was identified (Snowber et al., 2022). Our study makes several important contributions to this literature. First, neither previous study examined differences by nativity, which we found to be a significant driver of disparities. Second, because screening is universal, we can rule out differing rates of screening as a factor in disparities in diagnosis. Third, because all women are present at the hospital when they are screened, we can also rule out differential health care access as a factor in the observed disparities.

Several possible mechanisms may underlie our findings. First, women from racial and ethnic minority backgrounds and immigrant populations may be under-diagnosed compared with US-born White women due to clinician bias, minimization of symptoms, or limited familiarity with culturally distinct presentations of PMAD symptoms (Garb, 2021; Jieman et al., 2024; Kalibatseva and Leong, 2011). Clinicians may also be less likely to pursue diagnosis when treatment resources are perceived as limited (Byatt et al., 2012). A growing literature has documented the detrimental impact of implicit bias on the quality of care received by Black and Hispanic women (Saluja and Bryant, 2021). Second, patients from historically marginalized groups may be less likely to accept a mental health diagnosis from a perinatal health provider because of cultural stigma or concerns about potential consequences related to immigration status or involvement of child protective services (Lara-Cinisomo et al., 2018; Nicolaidis et al., 2010; Rokicki et al., 2023). In response, some individuals may downplay symptoms during clinical encounters to avoid formal documentation of a diagnosis (Iturralde et al., 2021). Third, disparities in access to mental health care prior to or during pregnancy may result in White women being more likely to have preexisting diagnoses documented in medical records and carried forward to the delivery hospitalization (Snowber et al., 2022). Prior studies have also found that women from racial and ethnic minority backgrounds and those with limited English proficiency face greater barriers to mental health care and report lower trust in health care professionals and thus may be less likely to disclose mental health history (Firth et al., 2022; Iturralde et al., 2021). Our sensitivity analysis restricting the sample to individuals without prenatal psychiatric diagnoses produced similar results, suggesting this pathway is unlikely to fully explain the observed disparities. Finally, the EPDS may be less

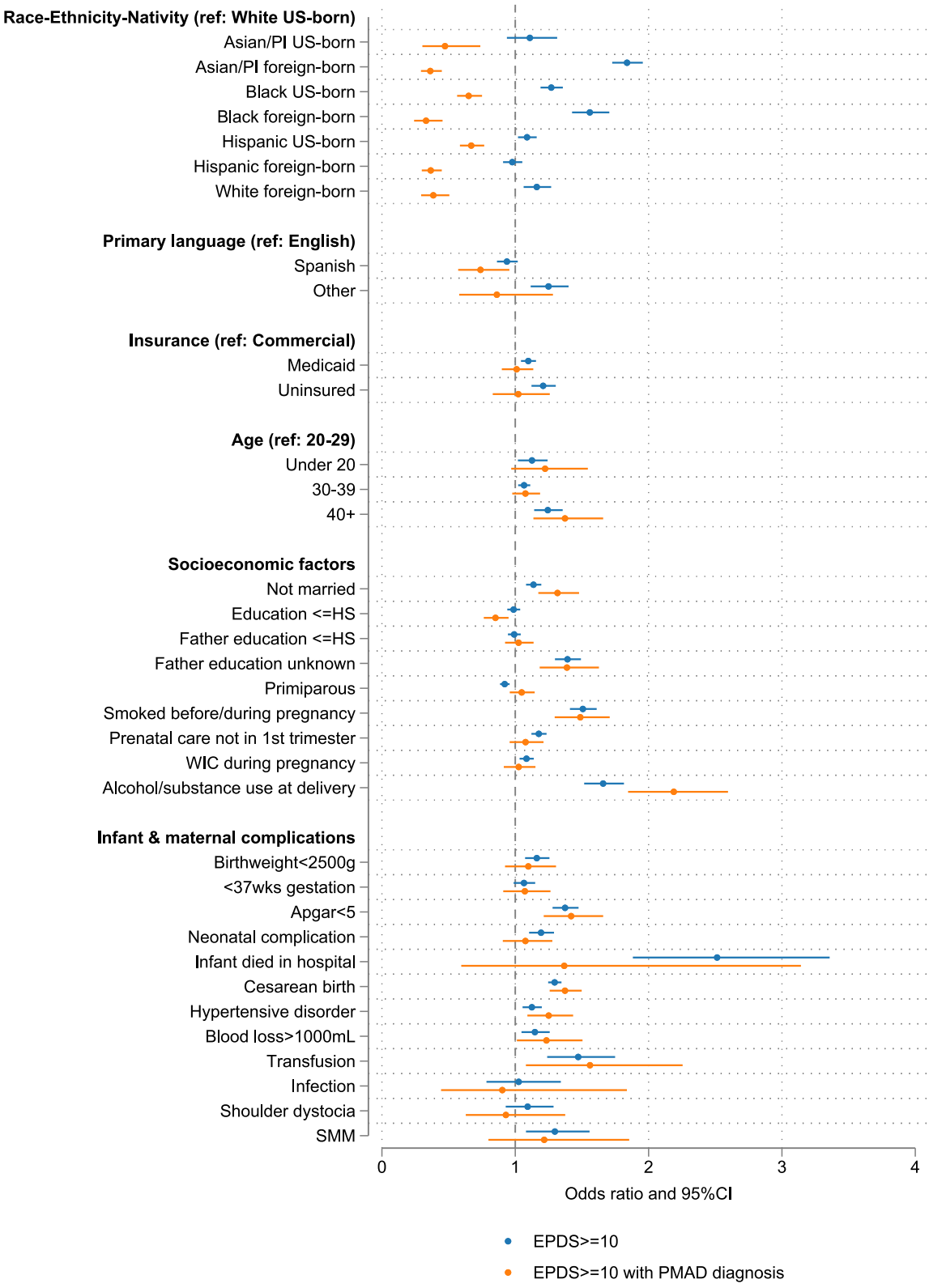

Fig. 2. Predictors of EPDS ≥ 10 and EPDS ≥ 10 with PMAD diagnosis during the delivery hospitalization, adjusted for covariates.
Notes: Odds ratios and 95% confidence intervals shown from logistic regression models. Standard errors are clustered at woman level. Models are adjusted for race-ethnicity-nativity, primary language, primary payer, maternal age, maternal and paternal education, marital status, primiparity, maternal smoking during or before pregnancy, prenatal care in the first trimester, WIC participation during pregnancy, diagnosis of alcohol or substance use disorder during the delivery, year of delivery, low birthweight, low Apgar score, preterm birth, admission to NICU, any neonatal complication, neonatal death, delivery route, hypertensive disorders, blood loss >1000 mL, transfusion, infection, shoulder dystocia, SMM, mental health diagnosis during an ED visit in the prenatal period. See Appendix Table 4 for full results. PMAD=Perinatal mood and anxiety disorder.

Table 2
Association of race, ethnicity, and nativity with elevated symptoms and diagnosis (n = 338,537).

	(1)	(2)
	EPDS ≥ 10	EPDS ≥ 10 with PMAD Diagnosis
Race-ethnicity-nativity (ref: White US-born)		
Asian/PI US-born	1.11	0.47***
	[0.94,1.31]	[0.30,0.74]
Asian/PI foreign-born	1.84***	0.36***
	[1.73,1.96]	[0.29,0.45]
Black US-born	1.27***	0.65***
	[1.19,1.36]	[0.56,0.75]
Black foreign-born	1.56***	0.33***
	[1.43,1.71]	[0.24,0.45]
Hispanic US-born	1.09**	0.67***
	[1.02,1.16]	[0.59,0.77]
Hispanic foreign-born	0.98	0.37***
	[0.91,1.05]	[0.30,0.45]
White foreign-born	1.16***	0.39***
	[1.06,1.27]	[0.29,0.51]

Notes: Odds ratios and 95% confidence intervals shown from logistic regression models. Standard errors are clustered at woman level. Models are adjusted for race-ethnicity-nativity, primary language, primary payer, maternal age, maternal and paternal education, marital status, primiparity, maternal smoking during or before pregnancy, prenatal care in the first trimester, WIC participation during pregnancy, diagnosis of alcohol or substance use disorder during the delivery, year of delivery, low birthweight, low Apgar score, preterm birth, admission to NICU, any neonatal complication, neonatal death, delivery route, hypertensive disorders, blood loss >1000 mL, transfusion, infection, shoulder dystocia, SMM, mental health diagnosis during an ED visit in the prenatal period. See Appendix Table 4 for full results. PMAD = Perinatal mood and anxiety disorder.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

Table 3
Association of screening and diagnosis outcomes at delivery with emergency department use in the postpartum year.

	Postpartum ED visit (OR)	Postpartum psychiatric ED visit (OR)	Postpartum ED visit with primary diagnosis for PMAD (OR)
EPDS < 10 (reference)	1.00 [1.00,1.00]	1.00 [1.00,1.00]	1.00 [1.00,1.00]
EPDS ≥ 10, without diagnosis at delivery	1.31*** [1.24,1.38]	2.23*** [1.99,2.51]	2.02*** [1.64,2.49]
EPDS ≥ 10, with PMAD diagnosis at delivery	1.83*** [1.65,2.04]	4.96*** [4.17,5.90]	4.20*** [3.16,5.57]
Observations	255,190	255,183	254,947

Notes: Postpartum year is period between the delivery hospitalization discharge and 365 days postpartum. Births limited to 2016–2018 to allow for one full year of postpartum data for all births. Models are adjusted for race-ethnicity-nativity, primary language, primary payer, maternal age, maternal and paternal education, marital status, primiparity, maternal smoking during or before pregnancy, prenatal care in the first trimester, WIC participation during pregnancy, diagnosis of alcohol or substance use disorder during the delivery, year of delivery, low birthweight, low Apgar score, preterm birth, admission to NICU, any neonatal complication, neonatal death, delivery route, hypertension, blood loss >1000 mL, transfusion, infection, shoulder dystocia, SMM, mental health diagnosis during an ED visit in the prenatal period. See Appendix Table 1 for ICD codes included in definitions of outcomes. Number of observations varies due dropping of some covariates that perfectly predict outcome. ED = emergency department. PMAD = Perinatal mood and anxiety disorder.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

accurate in lower-income or non-English speaking populations, such that positive screens are less likely to translate into diagnosis following evaluation (Chaudron et al., 2010). For example, the EPDS places emphasis on affective symptoms, while non-Western populations may experience depression through somatic complaints (Kalibatseva and Leong, 2011). Further research is needed to better understand these mechanisms and identify policies to improve equity in the clinical recognition of perinatal mental health disorders.

This research has important implications for clinical practice and health policy. Previous work has often cited lack of universal screening as a key barrier to improving perinatal mental health equity (Shuffrey et al., 2022; Sidebottom et al., 2021). Accordingly, multiple professional organizations recommend universal screening using standardized, validated instruments such as the EPDS during postpartum care (American College of Nurse-Midwives, 2024; Earls et al., 2019; Siu et al., 2016). Our findings demonstrate that even in a setting with universal screening, there are immediate and substantial racial and ethnic disparities in the pathway from screening to diagnosis. Screening without effective follow-up care risks creating missed opportunities for needed, potentially life-saving care. Expanding culturally responsive screening and treatment approaches, for example, by increasing provider capacity through reproductive psychiatry training and racial, ethnic, and linguistic diversity of the perinatal provider workforce, may enhance patient trust and mitigate implicit bias (Haight et al., 2024; Iturralde et al., 2021; Nagle-Yang et al., 2024). Because perinatal mental health is inherently cross-disciplinary, collaborative care models integrating mental health care into obstetric, midwifery, pediatric, and primary care settings may improve access to screening and treatment and have been found to be effective at reducing racial disparities (Byatt et al., 2015; Nagle-Yang et al., 2024; Snowber et al., 2022). Finally, the EPDS alone is insufficient to diagnose perinatal anxiety, which is a common but underrecognized perinatal mood disorder, and screening for perinatal anxiety remains less routine than depression screening (Fairbrother et al., 2019; Goodman et al., 2016). Screening for perinatal anxiety using a validated tool as well as use of multidimensional screening tools with stronger cultural validity in diverse populations, such as ones that place more emphasis on somatic symptoms, may improve clinical recognition of perinatal mental health disorders in racial and ethnic minority groups (Fairbrother et al., 2019; Kalibatseva and Leong, 2011).

4.1. Limitations

This study has limitations. First, although we used population-level administrative birth records, individuals who could not be matched to hospital discharge data or who had missing EPDS scores were excluded. Overall, 87% of singleton births to NJ residents were included in the analysis. Second, the prevalence of positive EPDS scores (3.8%) was lower than other studies, likely due to the timing of measurement just after delivery before hospital discharge, which may reduce the tool's sensitivity (Woody et al., 2017). Although the EPDS is usually administered 6–12 weeks postpartum, previous studies have found that scores in the immediate postpartum period are predictive of depressive symptoms up to four months after delivery (Dennis, 2004; Kim et al., 2008; Marín-Morales et al., 2018; Smithson et al., 2022). Reassuringly, socioeconomic and demographic patterns in positive screen rates were consistent with existing literature (Bauman, 2020; Huang et al., 2007). Some evidence suggests the EPDS does not reliably predict depression when administered in the first 24 h after delivery (Ezirim et al., 2023). While we do not have data on timing of administration, New Jersey hospitals generally administer screening on the day of discharge, and typical postpartum stays of 48 h for vaginal births and 72 h for cesarean births make administration within 24 h unlikely. Third, the EPDS is validated as a screening tool for perinatal depression but not for anxiety disorders. Because only total EPDS scores were available, we could not examine the anxiety subscale. Fourth, we lacked information on duration of residence in the U.S., and acculturation may influence

health outcomes, particularly among Hispanic populations (Toledo-Corral et al., 2022). Finally, while we controlled for a wide range of covariates, residual confounding from unobserved factors cannot be ruled out.

In conclusion, in a setting with universal screening of perinatal depression, this study found significant racial, ethnic, and nativity disparities in clinical recognition of perinatal mental health conditions. Compared to White US-born women, those from historically marginalized populations experienced higher odds of elevated symptoms, yet lower odds of receiving a diagnosis. Further research is needed to better understand the mechanisms behind these findings and identify and evaluate policies to improve equity in perinatal mental health care.

CRediT authorship contribution statement

Slawa Rokicki: Writing – review & editing, Writing – original draft, Visualization, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Erin-Ellen Dillon Fink:** Writing – review & editing. **Julie Blumenfeld:** Writing – review & editing, Conceptualization.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jad.2026.122155.

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