Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript

HHS Public Access

Author manuscript

J Womens Health (Larchmt). Author manuscript; available in PMC 2024 July 22.

Published in final edited form as:

J Womens Health (Larchmt). 2021 May ; 30(5): 731–738. doi:10.1089/jwh.2020.8373.

Postpartum Depressive Symptoms and Screening Opportunities at Health Care Encounters

Sarah C. Haight, MPH[1], **Jean Y. Ko, PhD**[1,2], **Michael W. Yogman, MD**[3], **Sherry L. Farr, PhD**[4]

[1]Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, Atlanta, Georgia, USA.

[2]Commissioned Corps of the U.S. Public Health Service, U.S. Department of Health and Human Services, Washington, DC, USA.

[3]Department of Pediatrics, Harvard Medical School, Harvard University and Mount Auburn Hospital, Cambridge, Massachusetts, USA.

[4]National Center on Birth Defects and Developmental Disabilities, Centers for Disease Control and Prevention, Atlanta, Georgia, USA.

Abstract

Background: The American College of Obstetricians and Gynecologists recommends that providers screen women for depression at the postpartum checkup. If this checkup is the only screening opportunity, women who do not attend or whose depressive episode occurs at a different time may not be identified. We evaluated women's encounters with postpartum health care to identify screening opportunities for postpartum depressive symptoms (PDS).

Materials and Methods: Pregnancy Risk Assessment Monitoring System (PRAMS) data for 2012–2015 from eight jurisdictions (n = 23,990, representing 1,939,865 women) were used to calculate percentage of women reporting attendance at postpartum checkups, well-child visits, or postpartum home visitation, by presence of PDS. PDS were assessed using a modified two-item Patient Health Questionnaire. Using Modified Poisson regression, adjusted prevalence ratios (aPR) and confidence intervals (95% CI) were calculated to compare health services by PDS, adjusted for sociodemographic characteristics.

Results: Almost all women with or without PDS attended a postpartum checkup (85.1% and 91.4%; aPR: 0.96; 95% CI: 0.93–0.99) and their infants attended a well-child visit (97.3% and 98.9%; aPR: 0.99; 95% CI: 0.98–1.00); 13.7% and 10.9% received home visitation (aPR: 1.18; 95% CI: 1.02–1.35). Of women with PDS who missed their postpartum checkup, 13.5% reported

Address correspondence to: *Sarah C. Haight, MPH, Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, Centers for Disease Control and Prevention, 4770 Buford Highway, MS S107-2, Atlanta, GA 30341, USA*, shaight@cdc.gov.

Author Disclosure Statement

No competing financial interests exist.

Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Supplementary Material

Supplementary Table S1

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

infant attendance at well-child visits, and 2.0% received home visitation. Of women with PDS, 98.8%, 86.1%, and 11.2% attended 1, 2, or 3 health services.

Conclusion: A large percentage of women with PDS may attend well-child visits or receive home visitation, representing opportunities for depression screening and referral for care.

Keywords

home visitation; postpartum checkup; postpartum depression; screening; well-child

Introduction

Postpartum depression is one of the most common conditions affecting new mothers. Symptoms may include depressed mood or loss of interest or pleasure.[1] Approximately 11.5% of women in the United States suffer from postpartum depressive symptoms (PDS).[2] PDS are associated with future chronic depression,[3] reduced quality of life,[4] lower rates of breastfeeding initiation and duration,[5,6] and, in severe cases, maternal mortality.[7] PDS and diagnosed postpartum depression can contribute to adverse infant outcomes, including disrupted maternal–infant attachment, impaired mental and motor development, difficult temperament, poor self-regulation, and increased likelihood of hospitalization and mortality.[8,9] To mitigate these outcomes, women with PDS should be identified and treated. Many clinical guidelines recommend depression screening in postpartum women, but timing varies. The U.S. Preventive Services Task Force (USPSTF) recommends depression screening in the general adult population, including pregnant and postpartum women,[10] the American College of Obstetricians and Gynecologists (ACOG) recommends depression screening at least once during the perinatal period and during comprehensive postpartum checkups,[11] and the American Academy of Pediatrics (AAP) recommends maternal depression screening at the 1-, 2-, 4-, and 6-month well-child visits.[12]

Nationally, ~90% of women attend their postpartum checkup.[13] ACOG recommends an initial assessment within the first 3 weeks postpartum, ongoing care as needed, and a checkup no later than 12 weeks postpartum.[14] Attendance at the postpartum checkup varies by maternal and infant characteristics,[15] and women with antenatal depressive symptoms may be less likely to attend.[16] A national survey found that less than half of women who attended a postpartum checkup felt that they received adequate information about postpartum depression.[17] In a 2017 survey of obstetrician-gynecologists, 82.3% reported often or always screening postpartum patients for depression.[18] Thus, not all providers are screening at the postpartum checkup, and even if universal screening was implemented, screening women for PDS only at postpartum checkups may miss women who cannot attend or whose depressive episode occurs at a different time. Although the majority of women report stable or slightly decreasing PDS over time, 2%–10% report a significant increase beyond 6 months postpartum.[3,19]

The AAP advises infant attendance at nine well-child visits with a health care provider or pediatrician from 2 weeks after birth through 24 months of age.[20] Nationally, ~92.7% of children aged 2 years have had at least one well-child visit, but, on average, they attend only six of the nine visits recommended by the AAP.[21] In 2013, less than half of pediatricians

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

screened mothers for depression.[22] Since then, AAP has recommended that pediatricians screen mothers for depression at the 1-, 2-, 4-, and 6-month well-child visits.[12]

Programs that offer home visits are another aspect of postpartum health care, but eligibility varies. Federally funded home visiting is traditionally geared toward low-income families, but some parts of the United States offer coverage for universal home visiting.[23,24] These visits provide families with assistance and information about breastfeeding, child development, parenting techniques, employment, and child care.[25] Although most home visitors cannot treat depression, they may be able to screen and refer to care.[26] Federally funded home visiting programs are mandated to screen for depression; in 2019, approximately 82% of caregivers were screened for depression by a home visitor.[27]

Given the frequency of well-child visits and postpartum home visits, they may be opportunities to screen for PDS and refer to services, if needed. ACOG recommends that programs not only reduce barriers to attendance at postpartum checkups but also incorporate psychological well-being assessment into additional encounters like well-child visits and postpartum home visits.[11,14] Screening at multiple encounters provides more opportunities for women to be screened by health care professionals with longer term interactions with mothers and infants.[12,28] We evaluated women's encounters with postpartum health care to identify screening opportunities for PDS. We aimed to do so by assessing the (1) prevalence of maternal characteristics by PDS, (2) prevalence of postpartum checkups, well-child visits, and postpartum home visitation by PDS, and (3) independent association between attendance at health care encounters and PDS, controlling for maternal characteristics.

Materials and Methods

Data source

We used data from the 2012 to 2015 Pregnancy Risk Assessment Monitoring System (PRAMS), an ongoing surveillance project of the Centers for Disease Control and Prevention and U.S. state and local health departments that collects jurisdiction-specific, population-based data on maternal attitudes and experiences before, during, and shortly after pregnancy.[29–30] For each participating jurisdiction, a monthly stratified sample of 100–250 women with a recent live birth is selected systematically from birth certificates. The PRAMS survey is mailed to sampled mothers 2–6 months after delivery. An informed consent document is included within each survey explaining the participant's rights; consent is implied with survey completion. After nonresponse to the mail survey, informed consent and responses are gathered orally during a telephone call follow-up. The survey has two parts: core questions asked by all states and optional questions for states to include in their survey.[29–30] Information from the survey is linked by the Centers for Disease Control and Prevention (CDC) to the birth certificate. The CDC and each site's institutional review boards review and approve PRAMS study protocol. PRAMS methods are described in detail elsewhere.[29–30]

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Sample

We included survey data from the eight jurisdictions (Alabama, Arkansas, Illinois, Nebraska, New Jersey, New York City, Texas, and Virginia) that met annual response rate thresholds for the study periods (≥60% for 2012–2014, ≥55% for 2015) and included the optional question on infant attendance at well-child visits.

Measures

Self-reported PDS were ascertained using a modified version of the 2-item Patient Health Questionnaire (PHQ-2): (1) "Since your new baby was born, how often have you felt down, depressed, or hopeless?" and (2) "Since your new baby was born, how often have you had little interest or little pleasure in doing things?" The five response options were never, rarely, sometimes, often, and always. Women responding "always" or "often" to either question were classified as experiencing PDS, consistent with other PRAMS analyses.[2,31] In postpartum women, the PHQ-2 has been shown to have high sensitivity (80%–90%), but moderate specificity (45%–65%).[32] Postpartum checkup attendance was determined from the following: "Since your new baby was born, have you had a postpartum checkup for yourself? A postpartum checkup is the regular checkup a woman has about 4–6 weeks after she gives birth." Women responding "yes" were classified as attending a postpartum checkup. Infant attendance at a well-child visit was determined from the following: "Has your new baby had a well-child checkup? A well-child checkup is a regular health visit for your baby usually at 1, 2, 4, and 6 months of age." Women responding "yes" were classified as having an infant that attended a well-child visit. Postpartum home visitation was determined from the following: "Since your new baby was born, has a home visitor come to your home to help you learn how to take care of yourself or your new baby? A home visitor is a nurse, a health care worker, a social worker, or other person who works for a program that helps mothers of newborns." Women responding "yes" were classified as receiving postpartum home visitation.

Covariates from the linked birth certificate were maternal age, race/ethnicity, marital status, education, and smoking status during pregnancy. Covariates from the PRAMS survey were insurance during prenatal care, parity, number of stressors in the year before delivery, infant neonatal intensive care unit (NICU) status, infant age at survey completion, and smoking status during the third trimester of pregnancy. Stressors in the year before delivery included sick family member, divorce or separation, moving, homelessness, loss of a job/reduction in pay, extended time away from partner, arguments with partner, pregnancy unwanted by partner, problems paying bills, partner went to jail, someone close struggled with drugs or alcohol, and someone close passed away.[30] For insurance coverage during prenatal care, women who reported no prenatal care or missing insurance information were assigned the value of insurance at delivery listed on the birth certificate, where available. For those with insurance data at both time points, insurance during prenatal care and insurance at delivery were highly concordant (83.4%).

Analysis

Prevalence estimates of PDS and confidence intervals (95% CI) were calculated across maternal characteristics. Pearson chi-squared tests were used to compare the distribution

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

of characteristics across PDS status. Prevalence estimates of postpartum checkups, well-child visits, and postpartum home visitation were calculated across PDS status. Using multivariable Poisson regression with a robust error variance, we calculated adjusted prevalence ratios (aPR) for attendance at each health care encounter for women with PDS compared to those without PDS. Estimates were adjusted for PRAMS jurisdiction, maternal age, race/ethnicity, marital status, education, insurance during pregnancy, parity, number of stressors in the year before delivery, infant's NICU status, and infant age at survey completion. Adjustment variables were chosen based on the available literature. We also calculated the percentage of women who reported various combinations of at least 1, 2, or 3 health care encounters. Two-sided p-values <0.05 were considered statistically significant.

All analyses were performed using SAS-callable SUDAAN (SAS Institute, Cary, NC) to account for complex sampling design. All analyses are weighted to include the sampling weight, nonresponse adjustment, and non-coverage adjustment so that weighted percentages represent the residents delivering live births in each of participating jurisdictions.[29–30]

Results

Data on infant attendance at well-child visits were available for 27,602 women during 2012–2015. Of those, we excluded 3,612 (12.3%) respondents missing information on whether the infant was alive at survey completion, PDS, postpartum checkup, postpartum home visitation, and covariates included in adjusted models. The final analytic sample included 23,990 women (weighted n = 1,939,865). Compared to women excluded from the analytic sample, women included in our analysis were more likely to be non-Hispanic white, have >12 years of education, have private insurance, and not have an infant in the NICU (p's <0.05; Supplementary Table S1).

The prevalence of PDS among women in our sample was 10.6% (95% CI: 10.0–11.2; Table 1). The distribution of maternal age, race/ethnicity, marital status, education, insurance during pregnancy, quantity of stressors in the year before delivery, and whether the baby stayed in the NICU significantly differed by PDS status (p's < 0.001). Those with PDS were more likely than their counterparts to be <24, non-Hispanic black or other race, unmarried, or educated ≤12 years; have Medicaid; report a higher number of stressors in the year before delivery; and have a baby in NICU (p's ≤ 0.001).

The large majority of women attended a postpartum checkup (90.7%; Fig. 1), but attendance was lower among women with PDS than among those without PDS (85.1% vs. 91.4%). The vast majority of women reported infant attendance at well-child visits (98.8%), but attendance was slightly lower among women with PDS than among those without PDS (97.3% vs. 98.9%). The prevalence of receiving postpartum home visitation was low (11.2%), but was higher in women with PDS than among those without PDS (13.7% vs. 10.9%). After adjusting for confounders, differences between women with and without PDS in engagement with postpartum checkups (aPR: 0.96; 95% CI: 0.93–0.99), well-child visits (aPR: 0.99; 95% CI: 0.98–1.00), and home visitation (aPR: 1.18; 95% CI: 1.02–1.35) were minimal. Maternal age, parity, and number of stressors before pregnancy were consistently independently associated with attendance for each of these visits (p < 0.05).

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

In terms of combinations of visits, of all women, 8.9% missed their postpartum checkup but reported that their infant attended a well-child visit; 89.9% reported attendance at both (Fig. 2). Of women with PDS, 13.5% missed their postpartum checkup but reported that their infant attended a well-child visit; 83.9% reported attendance at both. Of all women, 0.9% missed their postpartum checkup but reported home visitation; 10.3% reported encounters with both (Fig. 3). Of women with PDS, 2.0% missed their postpartum checkup but received postpartum home visitation; 11.7% reported encounters with both. Of all women, 99.6%, 90.9%, and 10.1% reported at least 1, 2, or 3 health care encounters, respectively (Fig. 4). Of women with PDS, 98.8%, 86.1%, and 11.2% reported at least 1, 2, or 3 health care encounters, respectively.

Discussion

In this population-based sample of postpartum women, 1 in 11 women did not attend a postpartum checkup and may have missed an opportunity to be screened for PDS. Of women with PDS, 13.5% missed their postpartum checkup but reported infant attendance at a well-child visit; 2% missed their postpartum checkup, but received a home visitor. Weighted, these two groups represent at least 26,000 women with PDS in our sample who could have been screened for depression if offered routinely during these encounters. If depression screening was offered routinely at all three types of visit, our analysis shows that over 98% of women with PDS would have been screened for depression at least once, while ~86% would have been screened at least twice and ~11% would have been screened at least thrice. After controlling for covariates, women with PDS were about as likely as those without PDS to attend their postpartum checkup, report infant attendance at well-child visits, and receive home visitors.

Many,[33–36] but not all,[37] studies have found that mothers reporting antenatal or postpartum depression were no less likely to have their infants attend age-appropriate, well-child visits. Although a retrospective cohort study at an Illinois care center found an association between depression and postpartum checkup nonattendance,[16] the authors only considered antenatal depressive symptomology, not postpartum depressive symptomology, which may explain the difference in findings. In contrast, another population-based study using New Jersey data found that women with a positive depression screen at delivery or postpartum had similar attendance at postpartum checkups as women with negative depression screens.[36]

Our study found that infant attendance at well-child visits occurs more commonly than mother attendance at postpartum checkups. Although well-child visits are intended to provide immunizations, track infant growth and development, and discuss concerns,[20] AAP recommends maternal depression screening at these checkups because of the potential effect of maternal depression on parenting and child health outcomes.[12] Specifically, PDS can increase the likelihood of parental abuse or neglect, missed health care visits, failed immunization uptake, reduced breastfeeding, and low car seat adherence.[37–39] Well-child visits may be opportunities for maternal depression screening because mothers often attend these checkups.[40] Pediatricians may also be the only health professional that the family continuously interacts with, particularly for mothers who are covered by Medicaid during pregnancy but lose coverage 60 days postpartum.[12] A 2013 survey of AAP members

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

found that only 44% of pediatricians screened mothers for depression.[22] Estimates of depression screening by pediatricians have not been documented since the introduction of the AAP guidelines, but low screening percentages may be due to ethical and legal questions regarding pediatricians' responsibility and liability for the quality of screening, referral, and follow-up, as well as time constraints during visits.[41] Several state Medicaid programs have recognized the importance of maternal depression screening and now allow pediatricians to bill for this screening as part of well-child visits.[42] The 21st Century Cures Act of 2016 also authorized the Health Resources and Services Administration to fund states to implement the Screening and Treating for Maternal Depression and Related Behavioral Disorders Program. This program gives pediatricians (and other providers) access to training or psychiatric consultation on maternal depression screening, treatment, and follow-up services and links to community-based resources.[43]

Our study also found that depression screening during postpartum home visitations may increase the proportion of women screened. Home visits aim to promote self-efficacy by providing support, helping reduce stress, and teaching problem-solving skills. They are most common among families with low income, low parental education, young age, or single parents.[25,44] Previous studies have shown that these same factors are associated with missing the postpartum checkup[45] and having postpartum depression.[46–48] Thus, incorporating depression screening into postpartum home visitation may help identify women with PDS and ensure referral to treatment. A survey of women eligible for home visitation found that 95% would be willing to complete a depression screening tool and 71% felt that the home, not clinics, was the most appropriate setting for screening.[49] For screening to succeed, home visitors would need training in screening and identification of depression, adequate time to conduct screening, and information on referrals to treatment.[44]

It must be noted that many barriers to care exist, including stigma, financial constraints or lack of insurance coverage, and lack of coordination of services and integration in places where women normally seek care.[50] If screening was to occur universally at settings like postpartum checkups, well-child visits, and postpartum visitation, it would be important to establish and maintain coordinated care between the providers at these encounters. The Community Preventive Services Task Force recommends this collaborative care to manage depressive disorders on the basis of strong evidence of the effectiveness of this approach in improving symptoms and treatment adherence and response.[51] In addition to coordinated care, systems must be in place to ensure that care is comprehensive and moves beyond screening.[11] A comprehensive care pathway would include assessment, triage and referral, treatment access, treatment initiation, symptom monitoring, and adaption of treatment based on symptoms.[52] Many professional organizations, like the USPSTF, ACOG, and the AAP, recommend that clinicians be prepared to provide a patient with a high risk of perinatal depression or a positive screen with care or referral to care.[11,12,53] While this analysis provides insight into an initial step in this pathway, postpartum attendance at various health care encounters, future research regarding provider practices along this continuum would help to better understand if this comprehensive care is being implemented in an equitable manner.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

This analysis is subject to at least five limitations. First, not all women with PDS have clinical depression, and the PHQ-2 may not identify all women with depression, since PRAMS is self-reported.[32] Second, results may not be generalizable to jurisdictions or women excluded from this analysis (12.3%). The women excluded had more risk factors for PDS and nonattendance at health care encounters, so results depicting the number of women who could have been screened if it were offered at all encounters may be underestimated. Third, this analysis was cross-sectional, so we were unable to determine the chronologic order of events (*e.g.*, if symptoms occurred before or after attendance). Fourth, information on infant attendance at well-child visits does not necessarily indicate mother attendance, but previous studies have found that mothers are the most likely family member to attend infant health care visits.[40] Finally, our analyses assumed that screening is being done universally at postpartum checkups now and that it would be done universally at well-child visits and postpartum home visits if it were added to these encounters.

Conclusion

In this analysis of eight PRAMS jurisdictions, we determined that, if depression screening were offered routinely at all postpartum checkups, well-child visits, and postpartum home visits, over 98% of women with PDS would be screened for depression at least once, while 86% would be screened at least twice and 11% would be screened at least thrice. Routine screening for postpartum depression at well-child visits and postpartum home visitations may improve identification of women with PDS and, if used in conjunction with accessible care options, increase access to treatment.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

References

1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders, 5th ed. Washington, DC: American Psychiatric Association, 2013.
2. Ko JY, Rockhill KM, Tong VT, Morrow B, Farr SL. Trends in postpartum depressive symptoms—27 states, 2004, 2008, and 2012. MMWR Morb Mortal Wkly Rep 2017;66:153–158. [PubMed: 28207685]
3. Najman JM, Plotnikova M, Williams GM, et al. Trajectories of maternal depression: A 27–year population-based prospective study. Epidemiol Psychiatr Sci 2017;26:79–88. [PubMed: 26781917]
4. Darcy JM, Grzywacz JG, Stephens RL, Leng I, Clinch CR, Arcury TA. Maternal depressive symptomatology: 16-month follow-up of infant and maternal health-related quality of life. J Am Board Fam Med 2011;24:249–257. [PubMed: 21551396]
5. Dennis CL, McQueen K. The relationship between infant-feeding outcomes and postpartum depression: a qualitative systematic review. Pediatrics 2009;123:e736–e751. [PubMed: 19336362]
6. Wouk K, Stuebe AM, Meltzer-Brody S. Postpartum mental health and breastfeeding practices: An analysis using the 2010–2011 pregnancy risk assessment monitoring system. Matern Child Health J 2017;21:636–647. [PubMed: 27449655]
7. Building US Capacity to Review and Prevent Maternal Deaths. Report from Nine Maternal Mortality Review Committees 2018. Available at http://reviewtoaction.org/Report_from_Nine_MMRCs. Accessed October 15, 2019.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

8. Jacques N, de Mola CL, Joseph G, Mesenburg MA, da Silveira MF. Prenatal and postnatal maternal depression and infant hospitalization and mortality in the first year of life: a systematic review and meta-analysis. J Affect Disord 2019;243:201–208. [PubMed: 30245252]
9. Murray L, Cooper PJ. The impact of postpartum depression on child development. Arch Dis Child 1997;8:55–63.
10. Siu AL; US Preventive Services Task Force. Screening for depression in adults: US Preventive Services Task Force recommendation statement. JAMA 2016;315:380–387. [PubMed: 26813211]
11. American College of Obstetricians and Gynecologists. ACOG Committee Opinion No. 757: Screening for perinatal depression. Obstet Gynecol 2018;132:e208–e212. [PubMed: 30629567]
12. Earls MF, Yogman MW, Mattson G, Rafferty J. Incorporating recognition and management of perinatal depression into pediatric practice. Pediatrics 2019;143:73–79.
13. Centers for Disease Control and Prevention. Prevalence of selected maternal and child health indicators for all PRAMS sites, Pregnancy Risk Assessment Monitoring System (PRAMS), 2012–2015. Available at: https://www.cdc.gov/prams/pramstat/pdfs/mch-indicators/PRAMS-All-Sites-2012-2015-508.pdf Accessed October 15, 2019.
14. American College of Obstetricians and Gynecologists. ACOG Committee Opinion No. 736: Optimizing postpartum care. Obstet Gynecol 2018;131:e140–e150. [PubMed: 29683911]
15. Centers for Disease Control and Prevention. Postpartum care visits—11 states and New York City, 2004. MMWR Morb Mortal Wkly Rep 2007;56:1312–1316. [PubMed: 18097343]
16. Shim JY, Stark EL, Ross CM, Miller ES. Multivariable analysis of the association between antenatal depressive symptomatology and postpartum visit attendance. Am J Perinatol 2019;36:1009–1013. [PubMed: 30500966]
17. Declercq ER, Sakala C, Corry MP, Applebaum S, Herrlich A. Major survey findings of listening to mothers (SM) III: New mothers speak out: report of national surveys of women's childbearing experiences conducted October–December 2012 and January–April 2013. J Perinat Educ 2014;23:17–24. [PubMed: 24453464]
18. Fedock GL, Alvarez C. Differences in screening and treatment for antepartum versus postpartum patients: are providers implementing the guidelines of care for perinatal depression? J Womens Health (Larchmt) 2018;27:1104–1113. [PubMed: 29757074]
19. McCall-Hosenfeld JS, Phiri K, Schaefer E, Zhu J, Kjerulff K. Trajectories of depressive symptoms throughout the peri- and postpartum period: Results from the First Baby Study. J Womens Health (Larchmt) 2016;25:1112–1121. [PubMed: 27310295]
20. American Academy of Pediatrics. AAP schedule of well-child care visits. Available at: https://www.healthychildren.org/English/family-life/health-management/Pages/Well-Child-Care-A-Check-Up-for-Success.aspx Accessed October 15, 2019.
21. Selden TM. Compliance with well-child visit recommendations: Evidence from the Medical Expenditure Panel Survey, 2000–2002. Pediatrics 2006;118:e1766–e1778. [PubMed: 17142499]
22. Kerker BD, Storfer-Isser A, Stein RE, et al. Identifying maternal depression in pediatric primary care: changes over a decade. J Dev Behav Pediatr 2016;37:113–120. [PubMed: 26836638]
23. Duke University. Family Connects International. Available at: www.familyconnects.org Accessed October 15, 2019.
24. Commonwealth of Massachusetts. Welcome Family. Available at: https://www.mass.gov/welcome-family Accessed October 15, 2019.
25. Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau. Home Visiting. Available at: https://mchb.hrsa.gov/maternal-child-health-initiatives/home-visiting-overview Accessed October 15, 2019.
26. Peters R, Genua D. Addressing maternal depression in the context of home visiting: opportunities and challenges. National Home Visiting Resource Center Research Snapshot Brief. Arlington, VA: James Bell Associates and Urban Institute, 2018.
27. Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau. The maternal, infant, and early childhood home visiting program: partnering with parents to help children succeed. Washington, DC: HRSA. 2020. Available at https://mchb.hrsa.gov/sites/default/files/mchb/MaternalChildHealthInitiatives/HomeVisiting/pdf/programbrief.pdf. Accessed June 23, 2020.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

28. Bright Futures, American Academy of Pediatrics. Recommendations for Preventive Pediatric Health Care. Available at: https://www.aap.org/en-us/Documents/periodicity_schedule.pdf Accessed October 15, 2019.
29. Shulman HB, D'Angelo DV, Harrison L, Smith RA, Warner L. The Pregnancy Risk Assessment Monitoring System (PRAMS): Overview of design and methodology. Am J Public Health 2018;108:1305–1313. [PubMed: 30138070]
30. Centers for Disease Control and Prevention. Pregnancy Risk Assessment Monitoring System (PRAMS). Available at: https://www.cdc.gov/prams Accessed October 15, 2019.
31. Stone SL, Diop H, Declercq E, Cabral HJ, Fox MP, Wise LA. Stressful events during pregnancy and postpartum depressive symptoms. J Womens Health (Larchmt) 2015;24:384–393. [PubMed: 25751609]
32. Duke Evidence-based Practice Center. Efficacy and Safety of Screening for Postpartum Depression. Comparative Effectiveness Review No. 106. Rockville, MD: Agency for Healthcare Research and Quality, 2013.
33. Mandl KD, Tronick EZ, Brennan TA, Alpert HR, Homer CJ. Infant health care use and maternal depression. Arch Pediatr Adolesc Med 1999;153:808–813. [PubMed: 10437752]
34. Kornfeld BD, Bair-Merritt MH, Frosch E, Solomon BS. Postpartum depression and intimate partner violence in urban mothers: co-occurrence and child healthcare utilization. J Pediatr 2012;161:348–353.e342. [PubMed: 22404952]
35. Farr SL, Dietz PM, Rizzo JH, et al. Health care utilisation in the first year of life among infants of mothers with perinatal depression or anxiety. Paediatr Perinat Epidemiol 2013;27:81–88. [PubMed: 23215715]
36. Farr SL, Denk CE, Dahms EW, Dietz PM. Evaluating universal education and screening for postpartum depression using population-based data. J Womens Health (Larchmt) 2014;23:–663.
37. Minkovitz CS, Strobino D, Scharfstein D, et al. Maternal depressive symptoms and children's receipt of health care in the first 3 years of life. Pediatrics 2005;115:306–314. [PubMed: 15687437]
38. Grupp-Phelan J, Whitaker RC, Naish AB. Depression in mothers of children presenting for emergency and primary care: impact on mothers' perceptions of caring for their children. Ambul Pediatr 2003;3:142–146. [PubMed: 12708891]
39. Leiferman J. The effect of maternal depressive symptomatology on maternal behaviors associated with child health. Health Educ Behav 2002;29:596–607. [PubMed: 12238703]
40. Salganicoff A, Ranji UR; Kaiser Family Foundation. Women and Health Care: A National Profile. Key Findings from the Kaiser Women's Health Survey. San Francisco, CA: Kaiser Family Foundation, 2005.
41. Chaudron LH, Szilagyi PG, Campbell AT, Mounts KO, McInerny TK. Legal and ethical considerations: risks and benefits of postpartum depression screening at well-child visits. Pediatrics 2007;119:123–128. [PubMed: 17200279]
42. Centers for Medicare and Medicaid Services. Maternal Depression Screening and Treatment: A Critical Role for Medicaid in the Care of Mothers and Children. Department of Health and Human Services. Available at: https://www.medicaid.gov/federal-policy-guidance/downloads/cib051116.pdf Accessed October 15, 2019.
43. National Association of State Alcohol and Drug Abuse Directors Inc. 21st Century Cures Act (Public Law 114–255): A Section-By-Section Analysis. Available at: https://nasadad.org/wp-content/uploads/2017/02/21st-Century-Cures-Section-by-Section.pdf Accessed October 15, 2019.
44. Ammerman RT, Putnam FW, Bosse NR, Teeters AR, Van Ginkel JB. Maternal depression in home visitation: a systematic review. Aggress Violent Behav 2010;15:191–200. [PubMed: 20401324]
45. Wilcox A, Levi EE, Garrett JM. Predictors of nonattendance to the postpartum follow-up visit. Matern Child Health J 2016;20(suppl 1):22–27. [PubMed: 27562797]
46. Price SK, Proctor EK. A rural perspective on perinatal depression: prevalence, correlates, and implications for help-seeking among low-income women. J Rural Health 2009;25:158–166. [PubMed: 19785581]
47. Boury JM, Larkin KT, Krummel DA. Factors related to postpartum depressive symptoms in low-income women. Women Health 2004;39:19–34. [PubMed: 15256353]

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

48. Pooler J, Perry DF, Ghandour RM. Prevalence and risk factors for postpartum depressive symptoms among women enrolled in WIC. Matern Child Health J 2013;17:1969–1980. [PubMed: 23329168]

49. Segre LS, O'Hara MW, Arndt S, Beck CT. Screening and counseling for postpartum depression by nurses: the women's views. MCN Am J Matern Child Nurs 2010;35:280–285. [PubMed: 20706098]

50. Ko JY, Farr SL, Dietz PM. Barriers in the diagnosis and treatment of depression in women in the USA: where are we now? Neuropsychiatry (London) 2013;3:1–3. [PubMed: 28018489]

51. Community Preventive Services Task Force. Recommendation from the Community Preventive Services Task Force for use of collaborative care for the management of depressive disorders. Am J Prev Med 2012;42:521–524. [PubMed: 22516494]

52. Byatt N, Xu W, Levin LL, Moore Simas TA. Perinatal depression care pathway for obstetric settings. Int Rev Psychiatry 2019;31:210–228. [PubMed: 30701995]

53. US Preventive Services Task Force. Interventions to prevent perinatal depression: US Preventive Services Task Force recommendation statement. JAMA 2019;321:580–587. [PubMed: 30747971]

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

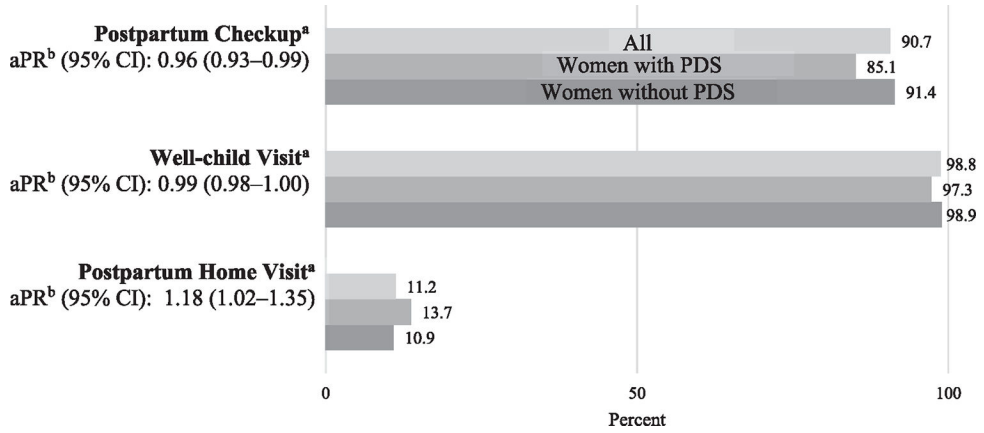

FIG. 1.

Postpartum health care encounters by PDS in eight PRAMS jurisdictions, 2012–2015 (weighted n = 1,939,865).

[a]Use of specific health services differed significantly by PDS ($p < 0.05$). [b]The likelihood of women with PDS using each service versus those without PDS (aPR) was adjusted for PRAMS jurisdiction, maternal age, race/ethnicity, marital status, education, insurance during pregnancy, parity, number of stressors in the year before delivery, NICU status of infant, and infant age in months at time of survey. aPR, adjusted prevalence ratios; NICU, neonatal intensive care unit; PDS, postpartum depressive symptoms; PRAMS, Pregnancy Risk Assessment Monitoring System.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

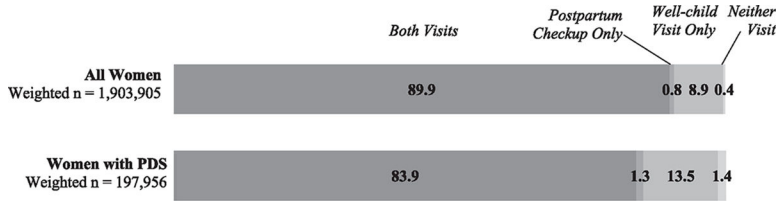

FIG. 2.

Distribution (%) of postpartum checkups and well-child visits by PDS in eight PRAMS jurisdictions, 2012–2015.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

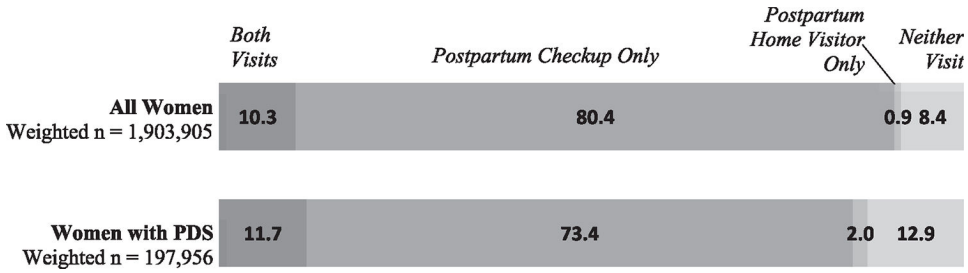

FIG. 3.

Distribution (%) of postpartum checkups and postpartum home visits by PDS in eight PRAMS jurisdictions, 2012–2015.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

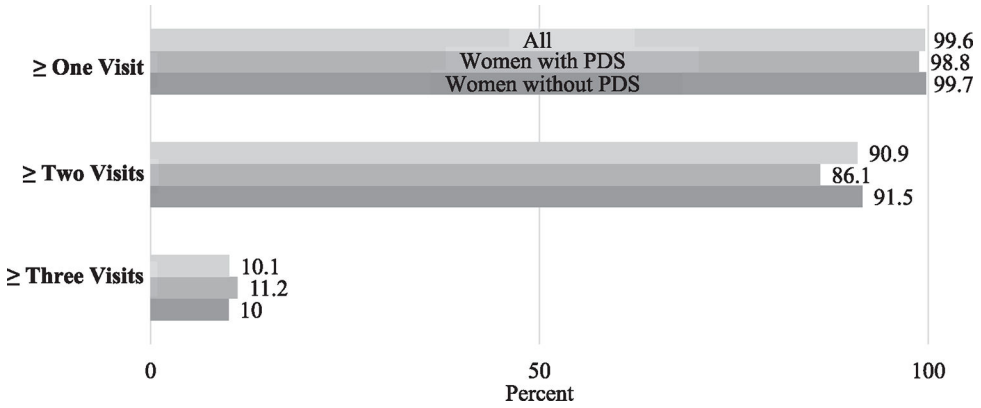

FIG. 4.

Distribution (%) of number of postpartum health care encounters by PDS in eight PRAMS jurisdictions, 2012–2015.

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Table 1.

Characteristics of Women With and Without Postpartum Depressive Symptoms, Eight PRAMS Jurisdictions, 2012–2015

Characteristics	*Total (n = 23,990)*		*Postpartum depressive symptoms* (n = *2,825*)		*No postpartum depressive symptoms* (n = *21,165*)		p
	N [a]	*% (95% CI)* [b]	*N* [a]	*% (95% CI)* [b]	*N* [a]	*% (95% CI)* [b]	
Total	23,990		2,825	10.6 (10.0–11.2)	21,165	89.5 (88.8–90.0)	
Age, years							
<20	1,418	6.0 (5.5–6.5)	268	10.2 (8.2–12.5)	1,150	5.5 (5.0–6.0)	<0.001
20–24	4,775	19.7 (18.9–20.5)	706	24.3 (21.8–27.0)	4,069	19.2 (18.3–20.0)	
25–34	13,518	56.2 (55.2–57.1)	1,432	51.4 (48.4–54.4)	12,086	56.7 (55.7–57.7)	
≥35	4,279	18.1 (17.4–18.8)	419	14.1 (12.3–16.0)	3,860	18.6 (17.8–19.3)	
Race/ethnicity							
Non-Hispanic white	10,553	47.8 (47.1–48.5)	1,004	39.9 (37.2–42.7)	9,549	48.7 (47.9–49.5)	<0.001
Non-Hispanic black	4,626	15.9 (15.4–16.4)	756	21.9 (20.0–24.1)	3,870	15.2 (14.6–15.7)	
Hispanic	5,357	27.3 (26.8–27.9)	516	25.6 (22.7–28.7)	4,841	27.5 (26.9–28.3)	
Other[c]	3,454	9.0 (8.6–9.5)	549	12.5 (10.9–14.3)	2,905	8.6 (8.2–9.1)	
Marital status							
Married	14,453	60.9 (60.0–61.8)	1,404	49.5 (46.6–52.5)	13,049	62.2 (61.2–63.2)	<0.001
Not married	9,537	39.1 (38.2–40.1)	1,421	50.5 (47.5–53.4)	8,116	37.8 (36.8–38.8)	
Education, years							
<12	3,522	14.7 (14.0–15.4)	500	17.3 (15.0–19.8)	3,022	14.4 (13.6–15.1)	<0.001
12	5,847	24.5 (23.6–25.3)	846	28.2 (25.5–31.0)	5,001	24.0 (23.1–24.9)	
>12	14,621	60.9 (60.0–61.8)	1,479	54.5 (51.5–57.5)	13,142	61.6 (60.7–62.6)	
Insurance during pregnancy[d]							
Medicaid	9,812	40.1 (39.2–41.1)	1,455	51.1 (48.1–54.0)	8,357	38.8 (37.9–39.8)	<0.001
Private[e]	12,524	51.9 (51.0–52.7)	1,125	39.7 (36.9–42.6)	11,399	53.3 (52.4–54.2)	
Other[f]	1,007	5.6 (5.1–6.2)	143	6.0 (4.6–7.6)	864	5.5 (5.0–6.2)	
Uninsured	647	2.4 (2.2–2.7)	102	3.3 (2.3–4.5)	545	2.3 (2.0–2.7)	
Parity							
First birth	10,001	40.9 (40.0–41.8)	1,187	43.0 (40.0–45.9)	8,814	40.6 (39.7–41.6)	0.138
Second or later birth	13,989	59.1 (58.2–60.1)	1,638	57.0 (54.1–60.0)	12,351	59.4 (58.4–60.3)	
No. of stressors in the year before delivery							
None	7,402	31.8 (30.9–32.7)	577	20.2 (18.0–22.6)	6,825	33.2 (32.2–34.1)	<0.001
1–2	10,043	41.3 (40.4–42.3)	990	35.2 (32.5–38.1)	9,053	42.1 (41.1–43.0)	
3–5	5,256	21.8 (21.0–22.6)	888	31.7 (29.0–34.6)	4,368	20.6 (19.8–21.5)	
6–13	1,289	5.1 (4.7–5.5)	370	12.8 (10.8–15.1)	919	4.2 (3.8–4.6)	
Infant stay in NICU after birth							
Yes	4,631	12.9 (12.4–13.5)	644	16.0 (14.1–18.0)	3,987	12.5 (12.0–13.1)	0.001
No	19,359	87.1 (86.6–87.6)	2,181	84.0 (82.0–85.9)	17,178	87.5 (86.9–88.0)	
Infant age at time of survey							

Author Manuscript Author Manuscript Author Manuscript Author Manuscript

Characteristics	N [a]	Total (n = 23,990) % (95% CI) [b]	Postpartum depressive symptoms (n = 2,825) N [a]	Postpartum depressive symptoms (n = 2,825) % (95% CI) [b]	No postpartum depressive symptoms (n = 21,165) N [a]	No postpartum depressive symptoms (n = 21,165) % (95% CI) [b]	p
2–3 months	2,228	10.9 (10.3–11.6)	286	11.9 (9.9–14.2)	1,942	10.8 (10.1–11.5)	0.055
4–5 months	14,849	62.0 (61.1–63.0)	1,796	64.0 (61.0–66.8)	13,053	61.8 (60.8–62.8)	
>5 months	6,913	27.0 (26.3–27.8)	743	24.1 (21.7–26.7)	6,170	27.4 (26.6–28.2)	

[a] Unweighted sample size.

[b] Weighted prevalence (expressed as a percentage).

[c] Includes Asian, American Indian, Alaska Native, Native Hawaiian, Pacific Islander, and mixed race/ethnicity.

[d] Data missing insurance coverage information during prenatal care were calculated with the value of insurance coverage during delivery.

[e] Includes Civilian Health and Medical Program of the Department of Uniformed Services (CHAMPUS) and Tricare.

[f] Includes Children's Health Insurance Program and other government programs.

CI, confidence interval; NICU, neonatal intensive care unit; PRAMS, Pregnancy Risk Assessment Monitoring System.