

Racial Inequities in the Availability of Evidence-Based Supports for Maternal and Infant Health in 93 Rural US Counties with Hospital-Based Obstetric Care

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Key Findings

- Among 93 counties with rural hospital-based obstetric care responding to a survey for this research, majority-Black, Indigenous, People of Color (BIPOC) rural counties have fewer resources, greater poverty, and worse health outcomes compared to majority-white rural counties. For example, in rural majority-BIPOC counties life expectancy is 2.3 years shorter and median household income is more than \$9,000 lower.
- The Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) Program was available in nearly all rural communities with hospital-based obstetric care in our survey (100% of majority-BIPOC counties and 97% in majority-white counties), but access to other evidence-based supports is limited. Midwifery care, group prenatal care, doula care, and postpartum support groups are only available in roughly half of rural counties with hospital-based obstetric care.
- Access to evidence-based supports for pregnant individuals and their families also differs, with fewer majority-BIPOC rural communities having access to prenatal care, perinatal mental health services, doula care, childbirth education, nurse home visiting programs, or postpartum support groups, compared to majority-white rural communities.
- Policies and programs that support rural maternal health should include a focus on racial/ethnic equity in access to evidence-based supports.

Purpose

Being pregnant in rural America means facing interconnected challenges: a greater risk of pregnancy-related complications or death, and declining access to maternity care during pregnancy and childbirth. For rural residents who are Black, Indigenous, and People of Color (BIPOC), pregnancy-related health outcomes and access to maternity care are even worse. Racial disparities in rural maternal and infant health outcomes may be related to limited accessibility of clinical care and pregnancy/postnatal support programs and services in rural communities. In this policy brief, we describe these differences between majority-BIPOC versus majority-white rural counties' available maternal and infant health evidence-based supports.

Background and Policy Context

The health of rural birthing people and their families is of growing concern as, compared with urban birthing people, this population experiences higher rates of infant mortality,^{1,2} maternal mortality, and severe maternal morbidity.³⁻⁵ Individuals who are both rural and BIPOC have the highest maternal mortality⁶ and infant mortality⁷ rates in the country. Additionally, a steady trend of rural hospital and maternity unit closures has reduced access to care for pregnant rural residents.⁸ Rural counties with a higher proportion of Black reproductive-age residents are at elevated risk of losing hospital-based obstetric care,⁹ potentially exacerbating existing maternal health risks among Black rural residents who are pregnant.¹⁰

Empirical research has shown that models of clinical care and a variety of economic, social, and educational supports are associated with improved infant and maternal health outcomes (Table 1). We categorized these evidence-based supports across four areas: (1) local access to care, (2) family-centered models

of maternity care, (3) peer and community supports for families, and (4) health-focused programming. For simplicity, we refer to these throughout this policy brief as “evidence-based supports.”

Prior research has noted that there is limited access to midwifery services^{32,33} and lactation (breastfeeding or chestfeeding) support^{34–36} in rural US communities, but little is known about the local availability of other evidence-based supports for rural families. This policy brief begins to fill this knowledge gap by describing the availability of these evidence-based supports in 93 rural US communities. Because of known racial inequities in birth outcomes, the analysis is stratified by responding hospitals located in majority BIPOC and majority white rural counties.

Approach

We used the American Hospital Association (AHA) Annual Survey data from 2010–2018 to identify rural hospitals that were open and operating an inpatient obstetric unit during that timeframe. Rural hospitals were identified as those located in rural counties based on Office of Management and Budget standard definitions of metropolitan statistical areas.³⁷ Rural included micropolitan and non-core counties with populations of 10,000–50,000 and fewer than 10,000, respectively, as indicated in the AHA data. Hospital region was based on U.S. Census Bureau designations for Northeast, Midwest, South, and West.³⁸ Hospital-based inpatient obstetric unit identification was based on an enhanced

two-stage method described in detail elsewhere.³⁹ We merged data from the County Health Rankings⁴⁰ by state and county Federal Information Processing System (FIPS) Codes to include community characteristics and health outcomes information about each of the counties where rural hospitals were located. Because of known inequities in access to care and in maternal and infant outcomes, we sampled all hospitals located in rural counties where the majority (>50%) of residents are Black, Indigenous, People of Color (BIPOC) (n=110) and a random sample of hospitals in rural counties where the majority (>50%) of the population is white (n=200). After investigating hospital websites and contacting hospitals by telephone, we removed hospitals that had closed or no longer offered inpatient obstetrics services, bringing the final sample to 285 hospitals, distributed across all U.S. Census Regions (5.43% Northeast, 31.95% Midwest, 37.70% South, and 24.92% West).

We developed a web-based survey, the Safe Maternity Care Instrument, with input from rural clinicians and administrators, and piloted the survey with administrators at six rural hospitals. The final version of the survey consisted of 47 questions that included questions about 12 evidence-based supports available in the hospital’s local community. The survey was administered in the Qualtrics (Provo, UT) platform from March to August 2021. Respondents could indicate if each evidence-based support was available in the community and affiliated with their hospital, available in

Table 1. Evidence-based supports for improving infant and maternal health outcomes

Area of evidence-based supports	Services and Care Resources Included
Local access to care	First-trimester access to local prenatal care and screenings ^{11,12} Nurse home visiting services in the prenatal and postpartum periods ^{13–15} Perinatal mental health services ^{16–19} Lactation support from international board-certified lactation consultants (IBCLC) ^{20,21}
Family-centered models of maternity care	Maternity care with certified nurse midwives ²² Group prenatal care (prenatal care offered in an interactive group setting) ^{23,24} Doula care (dedicated birth support from trained non-clinical personnel) ²⁵
Peer and community supports for families	Postpartum peer support groups ²⁶ Breastfeeding support groups ^{27,28}
Health-focused programming	Childbirth education classes ²⁹ Special Supplemental Nutrition Program for Women, Infants, & Children (WIC) ^{30,31}

the community and not affiliated with their hospital, not available, or “I don’t know”. Results described as available in the community were composed of a combination of responding hospitals that indicated “available in the community and affiliated with my hospital” and “available in the community and not affiliated with my hospital.” Data regarding variability of respondents who selected “I don’t know” for each evidence-based support is presented in the Supplemental Table.

At initiation of data collection, we emailed hospital chief executive officers (CEO) and chief nursing officers (CNO) a letter describing the study and requesting that the CEO/CNO forward the included survey link to the nurse manager of the obstetric unit. Follow-up efforts included reminder emails, contacting obstetric unit nurse managers by telephone to make them aware of the survey, and postcards with the survey QR code mailed directly to the nurse manager of the obstetric units. There were no incentives offered for participation in the study.

Descriptive statistics were computed and stratified by the racial-ethnic composition of the population in the county where the responding hospital was located. Chi-square and two-sample t-tests were conducted to determine if the county characteristics and survey responses differed significantly between hospitals located in counties with majority-BIPOC residents and those located in counties where the majority of the residents were white. Counties were classified as either majority-white or majority-BIPOC (i.e., counties where the majority of the population was anything other than “white, non-Hispanic”).

Note on Language: This policy brief uses the terms “maternal,” “maternity,” “female,” and “women” to align with language cited in secondary data sources. Where possible, we use “pregnant individuals,” “birthing people,” or “reproductive-age residents.” We remain committed to using respectful language and evaluating the state of pregnancy-related care for all rural Americans, including all individuals who do not identify as women.

Results

Ninety-three hospitals (93/285) completed the survey for a response rate of 32.6% (Table 2). Ninety hospitals answered the survey questions about available

evidence-based supports. Responding rural hospitals located in majority BIPOC counties (n=29) were most commonly located in the West (55.2%) and hospitals located in majority white counties (n=64) were most likely to be located in the Midwest (43.8%).

Many community characteristics varied significantly by racial composition of the county among responding hospitals. The majority-BIPOC counties were consistently under-resourced and showed worse health outcomes across an array of measures compared with majority-white counties. In majority-BIPOC rural counties compared with majority-white rural counties, life expectancy was almost three years shorter, and residents were nearly twice as likely to be uninsured. Further, median household income was \$9,017 lower and income inequality (i.e. the ratio of household income at the 80th percentile to income at the 20th percentile) was greater (ratio of 5.4 vs. 4.3). In majority-BIPOC counties, more infants were born low birth-weight (8.6% vs 7.7%), more children lived in poverty (31.7% vs 18.3%) and in single-parent households (42.7% vs 29.0%). The proportion of residents with limited access to healthy foods in majority-BIPOC counties was double that of majority-white counties (18.8% vs 7.8%) and almost half of the residents in majority-BIPOC counties experienced food insecurity (44.8%). Four times greater proportion of households in majority BIPOC counties were lacking a kitchen or plumbing (4.9% vs 1.2%). A smaller percentage of residents in majority-BIPOC rural counties had some college education (50.7% vs 61.8%), and a greater percentage were not proficient in English (4.4% vs 1.1%), compared to majority-white counties. Majority-BIPOC counties had significantly higher rates of violent crime (422.3 vs 219.5 per 100,000 population) than majority-white counties included in this study.

Availability of evidence-based supports also varied significantly between majority-BIPOC and majority-white rural counties (Table 3) according to survey responses. While available in 100 percent of communities of responding hospitals in majority-white rural counties, local prenatal care was significantly less available to those in majority-BIPOC counties (82.1%). Nurse home visiting for prenatal care (21.4% vs 46.8%) and perinatal mental health services (50.0% vs 72.6%) were also less available in majority-BIPOC communities. While not significantly different, access

Table 2. Community characteristics of rural counties with hospital-based obstetric care that are majority-BIPOC and majority-white among survey responding hospitals (N=93)

Rural county characteristics	Majority-BIPOC (n=29)	Majority-white (n=64)	p-value
Census Region [n (%)]			<0.01
Northeast	0 (0)	5 (7.8)	
Midwest	1 (3.4)	28 (43.8)	
South	12 (41.4)	14 (21.9)	
West	16 (55.2)	17 (26.6)	
Female county residents aged 18-49 years, 2018	264,013	767,364	
Life expectancy (years)	76.0	78.3	<0.01
Uninsured (%)	15.8	9.9	<0.01
Low birthweight (%)	8.6	7.7	0.02
Infant mortality (%)	7.3	7.1	0.80
Median household income (\$USD)	44,061	53,078	<0.01
Income inequality ratio*	5.4	4.3	<0.01
Children in poverty (%)	31.7	18.3	<0.01
Children in single-parent households (%)	42.7	29.0	<0.01
Food insecurity (%)	44.8	12.8	<0.01
Limited access to healthy foods (%)	18.8	7.8	<0.01
Households lacking kitchen or plumbing (%)	4.9	1.2	0.02
Some college education (%)	50.7	61.8	<0.01
Residents not proficient in English (%)	4.4	1.1	<0.01
Homeownership (%)	66.9	70.6	0.01
Violent crime (per 100,000 population)	422.3	219.5	<0.01

Note: P-values are t-tests for responding hospitals in majority-BIPOC counties v. majority-white counties. Reported (%) are mean % across the counties with responding hospitals.

* The ratio of household income at the 80th percentile to income at the 20th percentile.

to nurse home visiting for postpartum care (35.8% vs 53.2%), and lactation support from International Board Certified Lactation Consultants (IBCLC; 50.0% vs 67.7%) was also more limited.

Evidence-based family-centered models of care were limited in all rural counties but even more so in majority-BIPOC counties. Only approximately half of all responding hospitals' communities had access to midwifery care. Group prenatal care was not widely available in any of the communities with responding hospitals. Doula care was also not widely available in responding hospitals' communities but was significantly less available in responding hospitals' communities located in majority-BIPOC counties (32.1%) compared with majority-white counties (58.1%).

Postpartum peer support groups were limited in all responding hospitals' communities, but more limited in those located in majority-BIPOC counties (32.1% vs 56.5%). Supportive groups for breastfeeding specifically were more readily available, but still less so in majority-BIPOC counties (71.4% vs 83.9%) than majority-white counties.

Access to WIC was very common in both majority-BIPOC (100%) and majority-white (96.8%) rural communities with hospital-based obstetric care responding to our survey. Child-birth education classes were also widely available, but significantly less so in majority-BIPOC rural counties (78.6% vs 95.2%). Overall, all the rural communities described had limited availability of nurse home visiting, midwifery care, group prenatal care, doula services, and postpartum support groups.

Responding hospital administrators reporting "I don't know" varied greatly across supports queried, but administrators' awareness of availability of services was generally poorer in majority-BIPOC communities (Supplemental Table).

Discussion and Implications

This survey of hospital administrators in rural hospitals with obstetric services highlighted racial inequities in the local availability of evidence-based supports for maternal and infant health. The counties where responding hospitals were located differed along multiple socio-economic dimensions, with majority-BIPOC rural counties having fewer resources, greater poverty, and worse health conditions compared to majority-white rural counties. We also found differences

Table 3. Availability of evidence-based supports among responding hospitals by racial majority of county

	Majority-BIPOC (n=28)	Majority-white (n=62)	p-value
Available locally %			
Local access to care			
Individual (traditional model) prenatal care	82.1	100.0	<0.01
Nurse home visiting for prenatal	21.4	46.8	0.02
Nurse home visiting for postpartum	35.8	53.2	0.12
Perinatal mental health services	50.0	72.6	0.04
Lactation support from IBCLC	50.0	67.7	0.11
Family-centered models of care			
Midwifery care with CNM	46.4	46.8	0.98
Group prenatal care	35.7	43.5	0.54
Doula care	32.1	58.1	0.02
Peer and community supports for families			
Postpartum support groups	32.1	56.5	0.03
Breastfeeding support groups	71.4	83.9	0.17
Health-focused programming			
Childbirth education classes	78.6	95.2	0.02
Nutrition program (WIC)	100.0	96.8	0.34

Note: P-values are chi-square for responding hospitals in majority-BIPOC counties v. majority-white counties. IBCLC= International Board Certified Lactation Consultants.

based on the majority racial population in access to multiple evidence-based supports that have been shown to improve maternal and infant health outcomes. For example, fewer majority-BIPOC rural communities reported having doula care, childbirth education, nurse home visiting programs, or postpartum support groups, compared to majority-white rural communities. These structural differences in access to resources are especially critical given the known inequities in outcomes for rural BIPOC birthing people.^{6,41}

The significant differences in community characteristics between majority-white and majority-BIPOC counties are important given associations between structural racism indicators, social determinants of health, and perinatal outcomes.^{7,42} When entering pregnancy and new parenthood with stressors such as poverty, lack of health insurance, and high neighborhood crime rates, access to clinical, social, economic, and educational supports may be a mediating factor in maternal and infant health outcomes.⁴²⁻⁴⁶ Notably, our analysis shows that among responding hospitals, those located in majority-BIPOC rural counties (which had greater poverty, fewer resources, and worse health outcomes) reported signifi-

cantly less access to many evidence-based supports that have been shown to improve health outcomes for birthing people and their infants.

Our findings also reveal the ubiquity of local public health initiatives in rural communities. WIC, which provides access to nutritious foods, lactation support, and referrals to other health and economic resources, is almost universally available. However, fewer than 60 percent of US pregnant people eligible for WIC participate in the program each year,⁴⁷ an important reminder that availability does not equate to enrollment. Other investigators have found that perceived stigma, lack of transportation, and difficulty scheduling appointments are all barriers to WIC participation; racial inequities within these barriers have been reported as well.⁴⁸ Given the high availability of WIC services in both majority-white and majority-BIPOC counties, efforts to mitigate participation barriers with a racial equity approach – such as ensuring adequate language interpretation services, providing child care, and offering evening, weekend, and virtual appointments – may improve perinatal outcomes.

Nationally, breastfeeding/chestfeeding initiation, duration, and exclusivity rates are lower among Black and American Indian/Alaska Native birthing people.⁴⁹ Although formal lactation support is only one of many socio-economic and clinical factors associated with breastfeeding rates, it is a high-impact factor.^{50,51} While this analysis did not show statistically significant differences in available lactation support resources by community, the overall data indicated limited access in rural communities. Increasing the availability of IBCLC lactation support and breastfeeding/chestfeeding support groups in rural BIPOC communities may improve breastfeeding/chestfeeding rates.^{50,51}

Efforts to improve access to evidence-based supports for rural birthing people are important. These findings indicate that policies and programs to support rural maternal health should include targeted investment to promote racial equity in access to evidence-based supports. Given the importance of Medicaid programs for financing care during pregnancy, childbirth, and postpartum in rural communities,⁵² coverage and benefits decisions may impact access to evidence-based supports, including doula and midwife care, group prenatal care, childbirth education, visiting nurse services, and breastfeeding/chestfeeding support. Improving efforts to ensure that all rural pregnant people who qualify for Medicaid are enrolled in their first trimester may have the additional benefit of increasing access among those who are eligible for Medicaid. Additionally, workforce recruitment and retention programs such as student loan forgiveness for health professionals practicing in rural communities⁵³ may improve access to a variety of models of care and increase the number of clinicians providing maternity care in rural communities. Focusing on racial diversity in recruitment and retention efforts may further improve health outcomes, particularly for infants.⁵⁴ Workforce-related strategies could include expanding integration and reimbursement for midwifery services,⁵⁵ subsidizing training programs for doulas and midwives of color and expanding reimbursement for doula care,⁵⁶ and increasing perinatal mental health training for a variety of mental health clinicians who may already be practicing in rural areas (social workers, clinical psychologists, primary care providers, etc.).

Limitations

This study is subject to a number of important limitations. This analysis only examined rural communities with hospitals that provide obstetric care and did not include the many rural communities where obstetric services or hospitals have closed, or where services have long been unavailable. Rural US communities without obstetrics disproportionately include majority-Black rural communities,¹⁰ and all rural communities without obstetrics likely suffer worse access to evidence-based supports. For this analysis, the response rate and sample size were limited, reducing generalizability to all rural hospitals with obstetric care. Response bias may have been present as administrators who completed the survey may have felt more confident in their hospital/community resources than the counties that did not participate. The concurrent COVID-19 pandemic likely influenced our response rate and findings as rural hospitals struggled with patient care needs and adverse financial impacts. This analysis did not specifically examine policy factors such as Medicaid expansion status or pandemic-related policy changes. In addition, because the survey respondents were hospital-based, they may not be aware of all supports available in non-hospital settings in the community. Finally, we used an arbitrary cut-off of 50% non-Hispanic white to dichotomize the racial demographics of rural counties; this choice is consistent with past research, but was mostly done for convenience, and we recognize that there are many ways in which this could be measured, and many ways in which rural communities are diverse.

Conclusions

Rural maternal health is an important clinical and policy issue, where risks related to geography intersect with effects of racism on health. Policies and programs to support rural maternal health should include a focus on racial equity in access to evidence-based supports.

Suggested Citation

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Supplement

Responding hospital administrators reporting “I don’t know” varied greatly across supports queried, but administrators’ awareness of availability of services was generally poorer in majority-BIPOC communities (Supplemental Table).

Supplemental Table. Percent of respondents who responded “I don’t know” when queried about availability of evidence-based supports in the hospital community

	Majority-BIPOC (n=28)	Majority-white (n=62)
Respondents who did not know if services were available locally (%)		
Local access to care		
Individual (traditional model) prenatal care	3.6	0.0
Nurse home visiting for prenatal	21.4	12.9
Nurse home visiting for postpartum	17.9	14.5
Perinatal mental health services	17.9	9.7
Lactation support from IBCLC	0.0	0.0
Family-centered models of care		
Midwifery care with CNM	3.6	1.6
Group prenatal care	10.7	16.4
Doula care	14.3	11.3
Peer and community supports for families		
Postpartum support groups	14.3	17.7
Breastfeeding support groups	0.0	3.2
Health-focused programming		
Childbirth education classes	3.6	1.6
Nutrition program (WIC)	0.0	0.0

IBCLC= *International Board Certified Lactation Consultants.*