The Association Between Experiencing Racism and Postpartum Care: A Cross-Sectional Study of Pregnant People in the United States in 2019

Michelle Theresa Thomas

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Committee:

Daniel A. Enquobahrie

Wendy Barrington

Edward Kasner

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Department of Epidemiology

University of Washington

Abstract

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Michelle Theresa Thomas

Chair of the Supervisory Committee:

Daniel A. Enquobahrie

Department of Epidemiology

Background: The United States is the only high-income country with consistently high maternal mortality (MM) and severe maternal morbidity (SMM) rates, with Black pregnant people being disproportionately impacted. Racial and ethnic disparities in MM and SMM are not completely explained by social, economic, and behavioral factors suggesting that the impact of racism should be further explored as a driving factor of MM and SMM. Healthcare visits during the postpartum period, a period during which a significant proportion of pregnancy-related complications occur, provide an opportunity for interventions to prevent MM and SMM. The primary aim of this study was to quantify the association between experiencing racism within the 12 months before delivery and postpartum follow-up visit attendance. The secondary aim of this study was to examine if this association varies by racial and ethnic subgroups.

Methods: This research study was a cross-sectional secondary analysis of 2019 data from the Pregnancy Risk Assessment Monitoring System (PRAMS). PRAMS is coordinated by the

Centers for Disease Control and Prevention (CDC). The study sample included a total of 676,047 participants with 47,832 pregnant people experiencing racism and 628,215 pregnant people not experiencing racism. The outcome was not attending a postpartum follow-up visit within 4-6 weeks of giving birth. Three logistic regression models were used to calculate prevalence ratios (PR) and 95% confidence intervals. The first regression model was the crude, unadjusted model. The second regression model adjusted for demographic factors, and the third regression model adjusted for demographic factors and pregnancy complications. To address the secondary aim, the three regression models were run within each racial and ethnic subgroup.

Results: About 47,832 (7%) of participants experienced racism. The prevalence of postpartum nonattendance was 11% among participants who did experience racism, and 6.7% among participants who did not experience racism. In unadjusted and partially adjusted models, not attending postpartum follow-up visits were 67% (95% CI: 0.95, 2.92) and 51% (95% CI: 0.66, 3.48) higher among pregnant participants who did experience racism in comparison to pregnant participants who did not experience racism. However, both associations were not statistically significant. In fully adjusted models, associations were further attenuated, and postpartum nonattendance was statistically insignificant 28% (95% CI: 0.07, 5.26) higher among participants who experienced racism compared to those who did not. After adjusting for demographic factors and complicated pregnancies, although statistically insignificant, we observed stronger associations among Black and Indigenous pregnant participants, where postpartum nonattendance among Black pregnant participants who experienced racism was 87% and postpartum nonattendance among Indigenous pregnant participants was 92% higher compared to the respective referent groups of pregnant participants who did not experience racism.

Conclusion: In conclusion, we found that people who experienced racism may have a higher prevalence of postpartum follow-up nonattendance, although the associations were not statistically significant. The results from this study are consistent with previous reports from quantitative and qualitative studies. We also found that this association may be stronger among Black and Indigenous pregnant participants in comparison to White Non-Hispanic pregnant participants. The results from this study highlight the need for further exploration of the impacts of pregnant people experiencing racism and other pregnancy outcomes. The field of public health must research and address these impacts to promote the health of historically excluded groups, improve health equity, and protect the quality of life of birthing people and their new infants.

Background

Despite programs focused on improving the health of pregnant people, the United States (U.S.) is the only high-income country with high severe maternal morbidity (SMM), defined as the life-threatening complications of labor and delivery, and maternal mortality (MM), defined as the death of a person during pregnancy or within one year of the end of pregnancy from a pregnancy-related complication.[1,2] Further, significant racial and ethnic disparities in SMM and MM have been described.[3] For instance, based on recent estimates, Black birthing people were 3.6 times more likely to die from pregnancy-related complications than White birthing people.[4] Current racial and ethnic disparities in the United States are rooted in the historical context of enslavement and white supremacy in this country.[5] In the 1800s, the United States outlawed importing more African people for enslavement which incentivized slave owners to increase their wealth through unrestricted reproductive control on enslaved birthing people.[5] This set a precedent of devaluing Black birthing people's lives at the expense of protecting the social and economic interests of slave owners.[6] This history underpins current manifestations of white supremacy leading to the racialization of all non-white persons in the U.S.[5] The U.S. is a racialized society where meaning is assigned to individual groups based on shared characteristics such as culture and language.[7] The concept of race is socially constructed and not a biological category.[5] Black birthing people experience a combination of structural (unequal allocation of resources, goods, and opportunity based on established racial hierarchy), institutional (discrimination or unequal treatment arising from systems and expectations established within an institution), and interpersonal racism (prejudice and discrimination), that directly impacts the conditions and the environment where they are born, live, work, and play.[8,9] These factors have implications on health outcomes, including SMM and MM.[1–3,8–10] Racial disparity in SMM and MMR still exists even after adjusting for social, economic, and behavioral

factors at the individual level. This residual disparity suggests the impact of other driving forces such as structural and institutional racism on healthcare access and utilization.[4,11]

The postpartum period is crucial for preventing maternal deaths as 33% of maternal mortality occurs one week to one year after the end of pregnancy.[2] After delivery, having a postpartum health visit is critical for monitoring pregnancy-related health issues, developing treatment plans, and fostering health-promoting behaviors.[12] Although there is research demonstrating that pregnant people experiencing racism have higher rates of adverse pregnancy outcomes contributing to SMM and MM, it is not clear if experiencing racism is associated with postpartum healthcare nonattendance.[12–14] Black Indigenous and People of Color (BIPOC) birthing people historically have lower rates of postpartum follow-up attendance (ranging between 10% - 50%).[12] Given that 3 in 5 maternal deaths are preventable, it is imperative to determine if experiencing racism is a factor in postpartum nonattendance, an important preventative tool.[4]

Contemporary impacts of racism are rooted in the history of settler colonialism and enslavement in the U.S.[8] Settler colonialism refers to the systematic elimination of Indigenous people and replacement with a settler society, while enslavement was utilized as a tool for the U.S. to achieve the goal of permanent occupation of stolen land.[6] The racism that Black birthing people experience, including implicit (automatic or unintentional) bias, leads to the empathy gap, medical paternalism, and unpleasant clinical encounters during antenatal care could drive lower health care service utilization.[4,7,12] For example, a Black pregnant person may report feeling pain during their prenatal visit that their healthcare provider dismisses as the healthcare provider may not respond to pain in the same way for all their patients. Being dismissed by their healthcare provider may leave a Black pregnant person feeling unheard and disrupt the communication and relationship with their healthcare provider. A lack of trust that their healthcare provider has their best interest in mind Black birthing people state that unpleasant

clinical encounters leave them with a feeling of a loss of autonomy and lower self-determination.[15] It has been estimated that about 14% of pregnant people experience racism in a prenatal setting.[13] Additionally, there is qualitative evidence that hesitancy related to postpartum follow-up attendance is due to unpleasant treatment during labor and delivery.[15] However, there is a gap in quantitative evidence for the association between pregnant people experiencing racism with attendance of postpartum follow-up visits.[12] While it is well known that the impacts of racism are not equally distributed across racial and ethnic groups, there is no clear evidence of whether the associations between racism and postpartum attendance vary by race/ethnicity.[3]

This study aimed to evaluate the association between experiencing racism and postpartum healthcare attendance among pregnant people in the United States. In addition, the study also examined whether the associations vary by race/ethnicity. We hypothesized that birthing people experiencing racism could have higher postpartum nonattendance and that this association is stronger among Black pregnant people. Data from the Center for Disease Control and Prevention (CDC) Pregnancy Risk Assessment Monitoring System (PRAMS) between 2016 and 2019 were used for this cross-sectional study.

The findings of this study will provide insight into the mechanisms influencing associations of racism with SMM and MM, facilitating the effort to develop interventions that target the reduction of SMM and MM and related racial disparities.[1]

Methods

Study Design and Setting

This research study was a cross-sectional secondary analysis of data from the Pregnancy Risk Assessment Monitoring System (PRAMS). PRAMS is coordinated by the Centers for Disease Control and Prevention (CDC) in Atlanta, Georgia. PRAMS is a population-

based surveillance system of maternal health indicators focused on reducing infant mortality and low birth weight, as well as promoting safe parenthood.[16]

Study Participants

As part of PRAMS, states sampled between 1,000 and 3,000 birthing people each year. Some communities that are at higher risk (such as BIPOC and lower-income birthing people) were sampled at a higher rate to ensure enough data is available for analysis. Birthing people were identified based on the birth certificate of their new baby and were contacted between 2 and 6 months after giving birth. States made multiple attempts to contact birthing people using two modalities. First, the state made 5 contact attempts through the mail for the birthing person to complete the survey. Next, if there was no contact by mail, the state made up to 15 telephone contact attempts over varied days of the week and times of the day. PRAMS averaged about 61% response rate for the most recent phases of data collection (2016-2019). Approximately 80% of study subjects responded by mail and 20% by telephone. Additionally, PRAMS is weighted using a sampling weight, a nonresponse adjustment, and a noncoverage adjustment. For the current study, we used PRAMS data collected between 2016 and 2019. Participants included birthing people who had a live birth within the past year. The study population was restricted to birthing people who were nulliparous and had a singleton pregnancy. Of the 4,448,705 people included in the dataset from the CDC, 2,730,926 (61%) were excluded for not having information about experiencing racism or postpartum follow-up attendance (Figure 1). Of the remaining 1,717,779 pregnant people with complete exposure and outcome information, an additional 1,041,732 (23%) were excluded for not having singleton pregnancies or being nulliparous. A final total of 676,047 pregnant people were included in the data analysis. An Institutional Review Board (IRB) of the University of Washington Human Subjects Division determined an exempt status for the research.

Data Collection

The CDC has a core set of questions that are asked about topics including attitudes about most recent pregnancy, prenatal care, breastfeeding, health insurance coverage, infant health care, and contraceptive use. States have the option to add specialized sections (such as e-cigarette use and disability status) to their questionnaires for data collection.

Exposure and Outcome Definitions

The exposure of interest was experiencing racism defined based on the question: *During the 12 months before your new baby was born, did you feel emotionally upset (for example angry, sad, or frustrated) because of how you were treated based on your race?* This was a binary question with yes/no response options. Participants who responded yes to this question consisted of the exposed group. Participants who responded no to this question consisted of the unexposed group. The outcome of interest was postpartum healthcare nonattendance defined based on the question: *Since your new baby was born, have you had a postpartum checkup for yourself? A postpartum checkup is a regular checkup a birthing person has about 4-6 weeks after they give birth.* This was a binary question as well with yes/no response options. Participants who responded no to this question consisted of participants with the outcome. Similarly, participants who responded yes to this question were classified as not having the outcome.

Other Variables

We considered variables reflecting demographic characteristics, socioeconomic status, delivery method, and comorbidities in our analyses. The race variable was categorized as other Asian, white, Black, Native American, Chinese, Japanese, Filipino, Hawaiian, nonwhite, Alaska Native, or mixed-race based on the question: *What is your race?* Hispanic ethnicity was a binary variable with no (non-Hispanic, NH) and yes (Hispanic, H) response options to the question: *Are*

you Hispanic? Age was categorized in groups as less than or equal to 17, 18-19, 20-24, 25-29, 30-34, 35-39, and 40+. Marital status was a binary variable with no and yes response options to the question: *Is the birthing person married?* Gestational diabetes was binarized with no and yes response options to the question: *Have you been diagnosed with gestational diabetes?* High blood pressure starting during pregnancy was binarized with no and yes response options to the question: *Have you been diagnosed with high blood pressure since the start of your pregnancy?* Smoking status was binarized with no and yes response options to the question: *Does the birthing person smoke?* Cesarean section delivery was binarized with no and yes response options to the question: *First c-section?* Vaginal delivery was binarized with no and yes response options to the question: *Vaginal delivery?* Gestational age at delivery had categories of less than or equal to 27 weeks, 28-33 weeks, 34-36 weeks, 37-42 weeks, and 43+. Preterm birth was binarized with yes being less than 36 weeks and no being greater than 37 weeks at delivery. Low birth weight was categorized based on the question: *How many grams did the baby weigh at delivery?* Low birth weight was binarized with yes being up to 2,499 grams and no being greater than or equal to 2,500 grams. Income was a continuous variable based on the question: *What was your income in the 12 months before your pregnancy?* Insurance status was based on the question: *Method of payment?* People who are self-paid were classified as uninsured while respondents will all other options were considered insured. Comorbidities were classified based on the response to a series of questions about prior health conditions. All questions were binarized with response options no and yes. The questions sequentially ask: *Have you been diagnosed with depression? Anemia? Heart problems? Epilepsy? Thyroid problems? Polycystic Ovary Syndrome (PCOS)? Anxiety? Sick-cell anemia?* Lastly, pre-pregnancy Body Mass Index (BMI) was a calculated variable categorized as underweight (less than 19.8), normal (19.8-26), overweight (>26-29), and obese (>29).

Data Analysis

We calculated summary statistics using counts (percentages) for categorical variables and mean (standard deviation) for continuous variables. We examined the overall patterns of the data to assess distributions (normal or skewed) and identify outliers. The primary aim of this study was to quantify associations between experiencing racism and postpartum follow-up nonattendance among birthing people. Sampling weights were added and used to fit the logistic regression models. We fit unadjusted, partially adjusted, and fully adjusted logistic regression models with robust standard errors to calculate prevalence ratios (PR) and corresponding 95% confidence intervals. These models included exposure and outcome variables as well as adjustment variables. The variables included in the partially adjusted model were maternal age, race, ethnicity, gestational diabetes status, hypertensive conditions arising during pregnancy, smoking status, delivery method, gestational age at delivery, low birth weight, marital status, BMI, and income. The fully adjusted model included the variables included in the partially adjusted model as well as variables for pregnancy complications (gestational diabetes, hypertensive disorders, preterm birth, and low birth weight).

To examine potential effect modifications of the association by race and ethnicity, we fit the crude, partially adjusted, and fully adjusted models within each subgroup of race/ethnicity (Black Non-Hispanic, Hispanic, Asian, Indigenous, and White Non-Hispanic). To assess the significance of multiplicative interaction, we fit the crude, partially adjusted, and fully adjusted models with an interaction term for the exposure (experiencing racism) and race/ethnicity. The p-value for the interaction term was used to assess the statistical significance of interactions.

Statistical significance was determined using the p-value < 0.05 cutoff. All analyses were conducted using the statistical package R version 4.1.3.

Results

Baseline characteristics of the pregnant people in the analytic study population are presented in Table 1. The majority of the study population was between 25 and 29 years old. About 47,832 (7%) of participants experienced racism. The majority of people who did experience racism were between 20 to 24 years old while the majority of people who did not experience racism were 25 to 29 years old. The race and ethnicity distribution were different between exposure groups. Black Non-Hispanic pregnant comprised the majority of the people who experienced racism (31%) while most people who did not experience racism were White Non-Hispanic (55%). The greatest proportion of the total population made over $85,000 per year (34%); the greatest proportion of people who did experience racism made less than $16,000 per year (27%); and the greatest proportion of people who did not experience racism made over $85,000 per year (35%). Additionally, the cesarean section (c-section) rate of the total population was 30%, while pregnant people who experienced racism had a higher prevalence of c-section (38%) compared to pregnant people who did not experience racism (30%). The preterm birth prevalence of the total population was 8.5%, while pregnant people who experienced racism had a higher preterm birth prevalence (12%) compared to people who did not experience racism (8.3%). Similarly, the prevalence of low-birthweight was 8.5% in the total population while pregnant people who experienced racism had higher rates of low-birth-weight infants (12%) compared to people who did not experience racism (7.8%).

Results of analyses to quantify the relationship between experiencing racism before delivery and postpartum follow-up visit attendance are shown in Table 2. The prevalence of postpartum nonattendance was 11% among participants who did experience racism, and 6.7% among participants who did not experience racism. In unadjusted and partially adjusted models, postpartum nonattendance was 67% higher (95% CI: 0.95, 2.92) and 51% (95% CI: 0.66, 3.48), higher among participants who experienced racism compared to participants who did not

experience racism, respectively. However, both associations were not statistically significant. In fully adjusted models, associations were further attenuated, and postpartum nonattendance was statistically insignificant 28% (95% CI: 0.07, 5.26) higher among participants who experienced racism compared to those who did not experience racism.

Findings from analyses among subpopulations defined by race/ethnicity are shown in Table 2. Overall, there was no statistically significant interaction by race/ethnicity (p-value = 0.78). However, some notable potential differences in associations were observed among race/ethnicity groups. Black Non-Hispanic pregnant participants who experienced racism had 17% (95% CI: 0.42, 3.23) higher reports of not attending their postpartum follow-up visits compared to Black Non-Hispanic pregnant people who did not experience racism. When adjusting for demographic factors, Black Non-Hispanic pregnant participants who experienced racism had 38% higher reports of not attending their postpartum follow-up visits compared to Black Non-Hispanic pregnant participants who did not experience racism. [PR 1.38; (95% CI: 0.29, 6.50)]. After adjusting for demographic factors and complicated pregnancies, Black Non-Hispanic pregnant participants had 87% higher reports of not attending their postpartum follow-up visits compared to Black Non-Hispanic pregnant participants who did not experience racism [PR 1.87; 95% CI (0.26, 2.12)]. None of these associations were statistically significant.

A similar trend of non-statistically significant association was observed among Hispanic pregnant participants. Not attending postpartum follow-up visits was 11% higher among Hispanic pregnant participants who experienced racism compared to Hispanic pregnant participants who did not experience racism [PR 1.11; 95% CI (0.33, 2.72). After adjusting for demographic factors, not attending postpartum follow-up visits was 16% higher among Hispanic pregnant participants who experienced racism compared to Hispanic pregnant participants who did not experience racism [PR 1.16; 95% CI (0.18,7.60)]. After adjusting for demographic factors and complicated pregnancies, not attending postpartum follow-up visits was 56% higher among

Hispanic pregnant participants who experienced racism compared to Hispanic pregnant participants who did not experience racism [PR 1.56; 95% CI (0.08,31.95)]. Among Asian pregnant participants, those who experienced racism had 62% higher reports of not attending their postpartum follow-up visits compared to Asian pregnant participants who did not experience racism [PR 1.62; 95% CI (0.13, 19.93)]. After adjusting for demographic factors, Asian pregnant participants who experienced racism had 9% higher reports of not attending their postpartum follow-up visits compared to Asian pregnant participants who did not experience racism [PR 1.09; 95% CI (0.07, 16.58)]. After adjusting for demographic factors and complicated pregnancies, Asian pregnant participants who experienced racism had 37% higher reports of not attending their postpartum follow-up visits compared to Asian pregnant people who did not experience racism (PR 1.37; 95% CI (0.08, 18.65)]. None of these associations were statistically significant.

The strongest potential association was observed among Indigenous participants. Indigenous pregnant participants who experienced racism had statistically non-significant 354% higher reports of not attending their postpartum follow-up visits compared to Indigenous pregnant participants who did not experience racism [PR 4.54; 95% CI: (0.24, 85.09). After adjusting for demographic factors. Indigenous pregnant participants who experienced racism had 136% higher reports of not attending their postpartum follow-up visits compared to Indigenous pregnant participants who did not experience racism [PR 2.36; 95% CI (0.55, 5.35)]. After adjusting for demographic factors and complicated pregnancies, Indigenous pregnant participants who experienced racism had 92% higher reports of not attending their postpartum follow-up visits compared to Indigenous pregnant participants who did not experience racism [PR 1.92; 95% CI (0.89, 4.13)]. Similar to associations in other race/ethnicity groups, none of these associations were statistically significant.

Lastly, after adjusting for demographic factors and complicated pregnancies, White Non-Hispanic pregnant participants have a weaker association compared to Black Non-Hispanic, Hispanic, and Indigenous pregnant participants.

Discussion

In the current study, we found that pregnant people who experienced racism have a higher prevalence of postpartum health care non-attendance, although the associations were not statistically significant and became attenuated after adjustment for confounders such as demographics and complicated pregnancies. Additionally, we found potential differences across race/ethnic groups, with stronger associations among Black and Indigenous pregnant participants.

While previous studies have estimated the prevalence of experiencing racism at around 14%,[13] the prevalence of the total population of this study was around 7%. Previous research also estimated that the prevalence of postpartum follow-up nonattendance ranges between 10% and 50%.[12] In the current study, the prevalence of postpartum nonattendance in the total population was about 8% while among people who experienced racism it was around 12%. While previous research has established a relationship between experiencing racism and infant outcomes such as preterm birth (pregnant people who experienced racism were 29% more likely to have a baby who was preterm compared to pregnant people who did not experience racism), a statistically significant association was not found between experiencing racism and postpartum nonattendance.[13] There was no previous quantitative study for comparison of the results. Despite the lack of statistical significance in associations, we found a higher prevalence of not attending postpartum visits among people who experienced racism similar to reports from previous qualitative studies. Evidence from focus groups indicates that pregnant people who have experienced racism are less likely to continue to engage with the healthcare system.[15] This study demonstrated that pregnant people who experience racism report a higher

prevalence of postpartum nonattendance. Potential reasons for not finding a statistically significant association include potential selection bias due to a high percentage of exclusions. Other factors include residual confounding that could not be accounted for within this study, or that adjustment may have adjusted away potential pathways of association.

This relationship is consistent when examining racial and ethnic subgroups. Indigenous and Black pregnant participants had the strongest relationship compared to other racial and ethnic subgroups. After controlling for demographic factors and complicated pregnancies, postpartum nonattendance was 92% higher among Indigenous pregnant participants who experienced racism and 87% higher among Black pregnant participants who experienced compared to pregnant participants who did not experience racism. Another finding to highlight is that the smallest relationship was observed among Asian pregnant participants [PR 1.37; 95% CI (0.08,18.65)], contrary to the expectation that the relationship would be smallest among White Non-Hispanic pregnant participants [PR 1.42; 95% CI (0.11,18.39)]. Although there is variation in the relationship between experiencing racism and postpartum follow-up nonattendance, these relationships were not statistically significant.

This study contributes to a growing body of research on how racism impacts pregnancy outcomes. Many healthcare providers are trained for clinical examination and diagnosis, but not to view their patients within the greater social and economic context of their lives.[17] Healthcare providers are also products of their social environment meaning that they bring their beliefs and perceptions about people into their work as implicit and explicit bias.[17] Cultural stereotypes may not be consciously endorsed, but their existence influences a healthcare provider's communication style and decision-making process.[17] Healthcare providers may feel like they know what is best for their patients and have been shown to provide incomplete or incorrect information to influence their patients' decisions.[17] Pregnant people who report that they have experienced racism in their clinical encounters feel that trust is disrupted with their healthcare

provider team and a loss of reproductive autonomy.[15] This fractured trust increases the likelihood of having negative experiences during labor and delivery which is a factor in postpartum nonattendance.[11,12] Another factor that influences postpartum nonattendance is the impact of stress on pregnant people. Prior research proposes that Black birthing people may be more susceptible to the impacts of stress because of allostatic load and weathering which is defined as the cumulative risk of negative health outcomes in all regulatory systems due to chronic exposure to challenges or stressors across the life course.[11] Black birthing people are often responsible for caring for other children, earning income, and providing food for the family, in addition to caring for a newborn leading to elevated stress.[15] These stressors in addition to structural challenges such as transportation to postpartum appointments, lack of time, and limited financial support could also influence postpartum nonattendance.[17] Most prior research exploring the associations between racism and pregnancy outcomes is qualitative demonstrating the necessity for more quantitative studies to be conducted to quantify these associations.

Several limitations of the study deserve mention. One limitation is potential selection bias. Selection bias is introduced through nonresponse to mail and telephone attempts to contact the selected study participants. Out of the initial eligible study population, 75% were excluded due to missing information related to experiencing racism, postpartum nonattendance, and exclusion factors. This may impact the internal validity of this study as the experiences of the pregnant people excluded from this study may differ from those included in the study. A second limitation is misclassification. Surveys that are mailed are completed by the birthing person. There is the potential to misinterpret questions which could lead to misclassification. Additionally, telephone interviews are completed by a state worker. A birthing person may respond with what is socially desirable instead of the accurate reflection of their experience leading to response bias. Response bias is also introduced through birthing people

misremembering experiences that occurred months or even years before their interview. This response bias could lead to a birthing person having their exposure, in particular, or outcome categorized incorrectly. A final limitation is that although PRAMS includes 48 states, not every state included questions related to racism or postpartum nonattendance. Thus, the findings of this study may not accurately reflect the experiences of all pregnant people in the United States limiting generalizability.

In conclusion, we found that people who experienced racism have a higher prevalence of postpartum follow-up nonattendance, although the associations were not statistically significant. The results from this study are consistent with previous reports from quantitative and qualitative studies. We also found that this association was strongest among Black and Indigenous pregnant participants in comparison to White Non-Hispanic pregnant participants. Future studies need to be conducted to better understand the far-reaching impacts that experiencing racism has on pregnancy outcomes to address the increasing maternal morbidity and mortality rates. More surveillance systems (beyond just PRAMS from the CDC) should include questions regarding experiences of racism. Including these questions in more data sources facilitates research around racism's impacts on numerous pregnancy and infant outcomes. The history of the United States includes discrimination on multiple levels and has lasting contemporary impacts. The field of public health must research and address these impacts to promote the health of historically excluded groups, improve health equity, and protect the quality of life of birthing people and their new infants.

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Figure 1: Study Population with Inclusion and Exclusion Criteria

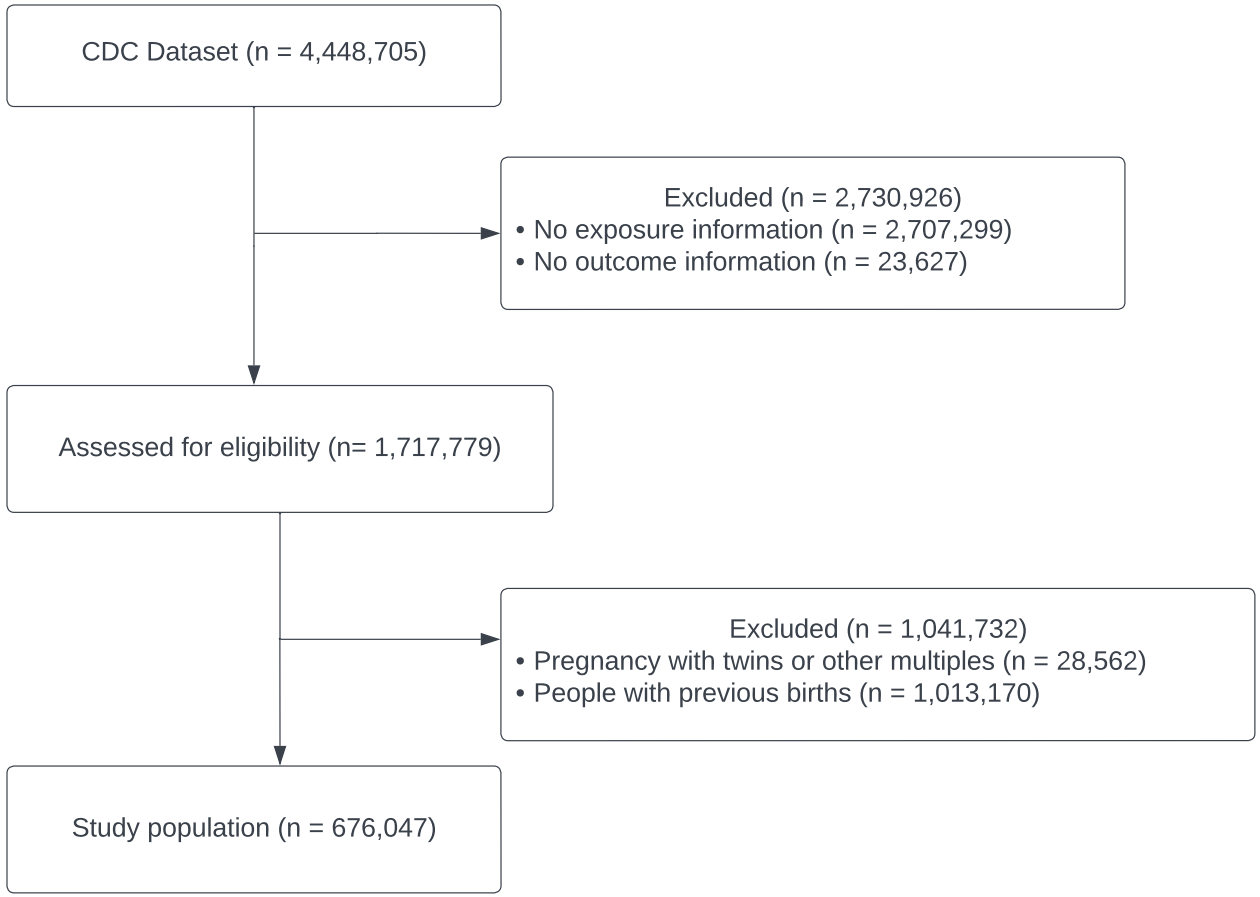

Table 1: Demographic Characteristics of Pregnant People in Study Population, Overall and by Experience of Racism

Variable	**Total Population**, N = 676,047[1]	**Experienced Racism**, N = 47,832[1]	**Did Not Experience Racism**, N = 628,215[1]
Age (years)			
Less than 17	15,561 (2.3%)	1,963 (4.1%)	13,598 (2.2%)
18-19	41,059 (6.1%)	4,374 (9.1%)	36,685 (5.8%)
20-24	166,720 (25%)	12,271 (26%)	154,449 (25%)
25-29	193,546 (29%)	12,164 (25%)	181,382 (29%)
30-34	171,785 (25%)	11,635 (24%)	160,150 (25%)
35-39	70,368 (10%)	3,693 (7.7%)	66,675 (11%)
40 or Older	16,992 (2.5%)	1,733 (3.6%)	15,259 (2.4%)
Race and Ethnicity			
Black Non-Hispanic	110,643 (17%)	14,755 (31%)	95,888 (15%)
White Non-Hispanic	352,956 (53%)	10,034 (21%)	342,922 (55%)
Hispanic	86,535 (13%)	9,900 (21%)	76,635 (12%)
Asian	50,053 (7.5%)	5,268 (11%)	44,785 (7.2%)
Indigenous	2,260 (0.3%)	565 (1.2%)	1,695 (0.3%)
Other Nonwhite	66,907 (10.0%)	6,635 (14%)	60,271 (9.7%)
Income			
$0-16000	99,359 (16%)	11,287 (27%)	88,072 (16%)
$16001-20000	44,240 (7.3%)	4,979 (12%)	39,261 (6.9%)
$20001-24000	32,300 (5.3%)	2,794 (6.6%)	29,506 (5.2%)
$24001-28000	22,897 (3.8%)	1,520 (3.6%)	21,377 (3.8%)
$28001-32000	28,731 (4.7%)	1,596 (3.8%)	27,135 (4.8%)
$32001-40000	31,346 (5.2%)	2,432 (5.8%)	28,913 (5.1%)

[1] n (%)

Variable	**Total Population**, N = 676,047[1]	**Experienced Racism**, N = 47,832[1]	**Did Not Experience Racism**, N = 628,215[1]
$40001-48000	34,891 (5.7%)	3,522 (8.3%)	31,369 (5.5%)
$48001-57000	26,276 (4.3%)	1,662 (3.9%)	24,614 (4.4%)
$57001-60000	18,153 (3.0%)	1,692 (4.0%)	16,460 (2.9%)
$60001-73000	30,053 (4.9%)	1,554 (3.7%)	28,499 (5.0%)
$73001-85000	34,479 (5.7%)	1,559 (3.7%)	32,920 (5.8%)
$85001+	204,878 (34%)	7,696 (18%)	197,182 (35%)
Insurance Type			
Medicaid	241,291 (36%)	23,208 (49%)	218,083 (35%)
Private Insurance	388,024 (58%)	20,641 (43%)	367,382 (59%)
Uninsured	22,868 (3.4%)	2,598 (5.4%)	20,270 (3.2%)
Indian Health Service	6 (<0.1%)	0 (0%)	6 (<0.1%)
Other Government	22,363 (3.3%)	1,383 (2.9%)	20,980 (3.3%)
Marital Status			
Married	385,363 (57%)	20,081 (42%)	365,282 (58%)
Not Married	290,553 (43%)	27,752 (58%)	262,801 (42%)
Delivery Method			
Vaginal	471,875 (70%)	29,722 (62%)	442,153 (70%)
Cesarean section	203,088 (30%)	18,024 (38%)	185,064 (30%)
Preterm Birth			
Preterm	57,685 (8.5%)	5,671 (12%)	52,014 (8.3%)
Not Preterm	618,348 (91%)	42,162 (88%)	576,186 (92%)
Low Birth Weight			
Low Birth Weight	54,394 (8.0%)	5,641 (12%)	48,753 (7.8%)

[1] n (%)

Variable	**Total Population**, N = 676,047[1]	**Experienced Racism**, N = 47,832[1]	**Did Not Experience Racism**, N = 628,215[1]
Not Low Birth Weight	621,558 (92%)	42,191 (88%)	579,367 (92%)
Body Mass Index (BMI)			
Underweight	62,639 (9.8%)	4,280 (10%)	58,359 (9.8%)
Normal	311,065 (49%)	20,236 (48%)	290,829 (49%)
Overweight	88,988 (14%)	5,887 (14%)	83,101 (14%)
Obese	177,116 (28%)	11,767 (28%)	165,350 (28%)
Diabetes			
Has Diabetes	45,711 (6.8%)	2,909 (6.1%)	42,802 (6.8%)
Does Not Have Diabetes	629,735 (93%)	44,851 (94%)	584,883 (93%)
High Blood Pressure (HBP)			
Has HBP	85,557 (13%)	5,359 (11%)	80,198 (13%)
Does Not Have HBP	589,889 (87%)	42,401 (89%)	547,487 (87%)
Heart Disease			
Has Heart Condition	7,560 (2.3%)	1,146 (4.9%)	6,414 (2.1%)
Does Not Have Heart Condition	315,601 (98%)	22,182 (95%)	293,419 (98%)
Smoking			
Smoker	23,454 (3.5%)	1,691 (3.5%)	21,763 (3.5%)
Not a Smoker	651,287 (97%)	46,118 (96%)	605,169 (97%)
Epilepsy			
Has Epilepsy	7,891 (2.0%)	781 (2.8%)	7,110 (2.0%)

[1] n (%)

Variable	**Total Population**, N = 676,047[1]	**Experienced Racism**, N = 47,832[1]	**Did Not Experience Racism**, N = 628,215[1]
Does Not Have Epilepsy	384,248 (98%)	26,975 (97%)	357,273 (98%)
Thyroid Condition			
Has Thyroid Condition	27,431 (6.3%)	2,029 (6.8%)	25,402 (6.3%)
Does Not Have Thyroid Condition	405,972 (94%)	27,838 (93%)	378,134 (94%)
Polycystic Ovary Syndrome (PCOS)			
Has PCOS	38,252 (8.8%)	2,526 (8.4%)	35,727 (8.9%)
Does Not Have PCOS	394,563 (91%)	27,460 (92%)	367,103 (91%)
Anemia			
Has Anemia	49,927 (14%)	5,603 (22%)	44,324 (13%)
Does Not Have Anemia	313,582 (86%)	19,394 (78%)	294,187 (87%)
Depression			
Has Depression	90,678 (14%)	12,369 (26%)	78,309 (13%)
Does Not Have Depression	579,442 (86%)	34,568 (74%)	544,874 (87%)
Anxiety			
Has Anxiety	107,884 (24%)	10,909 (35%)	96,975 (23%)
Does Not Have Anxiety	347,894 (76%)	20,066 (65%)	327,829 (77%)

[1] n (%)

Table 2: Postpartum Visit Attendance with Crude, Partially Adjusted, and Fully Adjusted Prevalence Ratios (PR) and 98% Confidence Intervals								
Variable	**Did Not Attend Postpartum Visit** N = 53,081	**Did Attend Postpartum Visit** N= 622,966	**Crude PR**	**95% CI**	**Partially Adjusted PR**	**95% CI**	**Fully Adjusted PR**	**95% CI**
Exposure Status								
Experienced Racism	5,977 (11%)	41,855 (6.7%)	1.67	(0.95,2.92)	1.51	(0.66,3.48)	1.28	(0.07,5.26)
Did Not Experience Racism	47,104 (89%)	581,111 (93%)	ref		-		-	
Subgroups Defined by Race and Ethnicity								
Black Non-Hispanic	11,781 (26%)	98,861 (18%)	1.17	(0.42,3.23)	1.38	(0.29,6.50)	1.87	(0.26,2.12)
Hispanic	11,070 (25%)	75,465 (14%)	1.11	(0.33,2.72)	1.16	(0.18,7.60)	1.56	(0.08,31.95)
Asian	3,726 (8.3%)	46,327 (8.3%)	1.62	(0.13,19.93)	1.09	(0.07,16.58)	1.37	(0.08,18.65)
Indigenous	523 (1.2%)	1,737 (0.3%)	4.54	(0.24,85.09)	2.36	(0.55,5.35)	1.92	(0.89,4.13)
White Non-Hispanic	17,956 (40%)	335,000 (60%)	2.44	(0.93,6.41)	1.77	(0.59,5.31)	1.42	(0.11,18.39)