31 2019 on severe maternal morbidity by race in participating military treatment facilities (MTFs) that performed more than 1000 deliveries per year for our retrospective cohort study. Chi squared tests compared the percentages of cesarean deliveries, adult ICU admissions, and severe maternal morbidity between Black and White patients.

**RESULTS:** There were a total of 23,728 deliveries with 15,305 encompassing self-identified Black and White women (23 vs. 77%). A total of 282 women experienced SMM with 38 adult ICU admissions and 190 postpartum hemorrhages. Black women were more likely to have a delivery via cesarean section (31.68% vs 23.58%, P value <0.0001), be admitted to an adult ICU (0.49% vs 0.18%, P value 0.0026), and experience overall SMM (2.66% vs 1.66%, P value 0.0001) compared to their White counterparts. Additionally, Black women were more likely to experience SMM when excluding blood transfusion (0.64% vs 0.32%, P value 0.0139). There was no significant difference between races in overall SMM among postpartum hemorrhage cases or when excluding blood transfusion.

**CONCLUSION:** Equal access to care and socioeconomic status do not explain the healthcare disparities encountered by Black women having children in the United States. Further studies to assess causes such as systemic racism (including implicit and explicit medical biases) and physiologic factors are warranted.



Severe Maternal Morbidity by Race



Cesarean Section Rates by Race
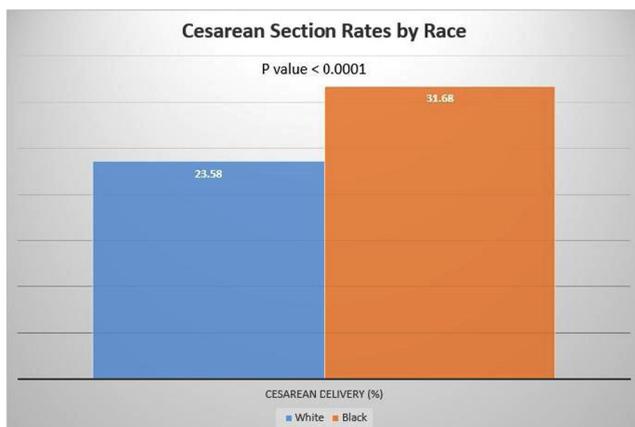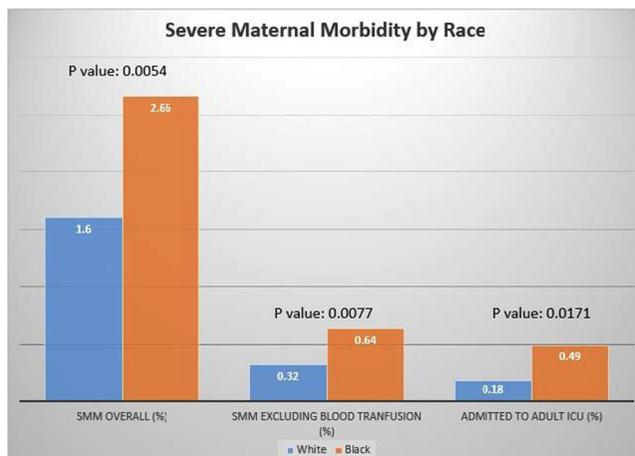
### 24 Maternal Psychosocial Factors associated with Postpartum Pain

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**OBJECTIVE:** The experience of pain is shaped by a host of psychological, cultural, and social factors. Our objective was to examine the relationship between self-reported postpartum (PP) pain and psychosocial factors including relationship status, pregnancy intendedness, employment, education, and mood disorder.

**STUDY DESIGN:** This was a prospective observational study of PP patients at one institution (5/2017-7/2019) who utilized an oral opioid at least once during their PP hospitalization. Enrolled participants completed a survey which included questions regarding their social situation (including relationship status), psychiatric diagnoses, and perceptions of pain control during their PP hospitalization. The primary outcome for this analysis was self-reported overall pain during the PP hospitalization (score of 0-100). Multivariable analyses accounted for age, BMI, nulliparity and mode of delivery. Self-identified race and insurance status were not included given their collinearity with other exposures.

**RESULTS:** In this cohort of 428 PP patients, the majority (84.0%) underwent cesarean delivery and 42.0% were nulliparous. Participants reported a median pain score of 40 out of 100 (IQR 30-60). On bivariable analyses, there was no significant difference in pain score between patients with and without an unplanned pregnancy or a mood disorder. Patients who were un-partnered, those without a college education, and those who were unemployed reported significantly higher pain scores (57.5 vs. 44.8, p<0.001; 52.6 vs 44.6, p<0.001; and 53.6 vs. 44.6; p<0.001, respectively). On multivariable analyses, patients who were un-partnered (a$\beta$ 8.3, 95% CI 2.0-14.7) and unemployed (a$\beta$ 7.5, 95% CI 2.5-12.6) remained significantly more likely to report a higher pain score (Table).

**CONCLUSION:** Psychosocial factors such as relationship and employment status, which are indicators of social support, may contribute to the experience of pain PP. These findings suggest that addressing social support —such as via enhanced support from the health care team—warrants exploration as a non-pharmacologic means of improving PP pain experience.

Table: Psychosocial factors and postpartum pain score

| | N (%) N=428 | Pain score (1-100) | | p-value | a$\beta$[1] (95% CI) |
| --- | --- | --- | --- | --- | --- |
| | | Exposed | Unexposed | | |
| Un-partnered | 50 (11.7) | 57.5 ± 24.6 | 44.8 ± 17.8 | <0.01 | 8.35 (2.02-14.67) |
| Unintended pregnancy | 88 (20.6) | 49.7 ± 21.9 | 45.3 ± 18.2 | 0.05 | 2.77 (-1.41-6.95) |
| Unemployed | 72 (16.8) | 53.6 ± 20.9 | 44.6 ± 18.4 | <0.01 | 7.54 (2.52-12.58) |
| Less than college education | 88 (20.6) | 52.6 ± 24.1 | 44.6 ± 17.3 | <0.01 | 3.76 (-8.90-1.38) |
| Mood disorder | 74 (17.3) | 45.4 ± 18.8 | 46.3 ± 19.0 | 0.72 | -1.04 (-5.88-3.79) |

Data displayed as N (%) and mean ± SD
a$\beta$, adjusted beta coefficient; CI, confidence interval
1. Multivariable logistic regression accounting for age, body mass index, nulliparity, cesarean delivery

### 25 The surprising paradox: higher education increases the racial/ethnic disparity in cesarean delivery rates

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**OBJECTIVE:** We aimed to evaluate the impact of maternal education on the well-documented racial/ethnic disparity in the rates of primary cesarean delivery (CD) in the US.

**STUDY DESIGN:** Retrospective analysis of the CDC's Natality Live Birth database (2016-2018). Nulliparous, singleton term births with available data for non-Hispanic Whites, non-Hispanic Blacks, non-Hispanic Asians and Hispanics were included. Data were analyzed based on maternal education level (less than high school [< HS], high school grad [HSG], college grad [CLG] and advanced degree [AD]). We compared the prevalence of CD across different racial/ethnic groups within each education level, as well as across different education levels within each race/ethnicity, using Pearson's chi-square test with the Bonferroni adjustment. Logistic regression was used to adjust outcomes in each education level for potential confounders: maternal age, pre-pregnancy BMI, insurance type, neonatal birth weight and fetal presentation. Results were displayed as adjusted odds ratios (aOR) and 95% confidence intervals (CI) with Whites as the reference group.

**RESULTS:** The primary CD rate was 27.86% (788,742 of 2,831,065 births). Racial/ethnic disparities were documented across all education levels, with the highest CD rates in Blacks. Additionally, the racial/ethnic disparity increased with higher levels of education (Table 1). Figure 1 shows the differences in the aOR for CD in each racial/ethnic group across education levels, compared to Whites, illustrating that the racial/ethnic disparity is more prominent with higher education levels. For Blacks, the aOR gradually increases from 1.31 (CI 1.27-1.34) for < HS to 1.66 (CI 1.61-1.71) for AD.

**CONCLUSION:** We document that race/ethnicity, as well as level of education, are essential factors impacting the risk of primary CD in the US. Surprisingly, the racial/ethnic disparity is higher as maternal education level increases. This may suggest that the disparity in CD rates is not primarily due to differences in social status. Further investigation is needed in order to elucidate the underlying causes for this paradox.
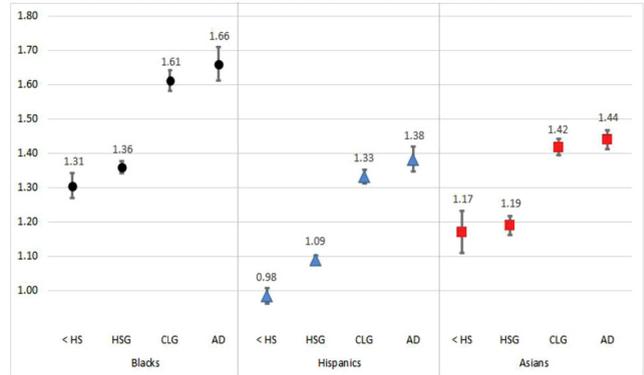


Figure 1. Primary CD adjusted Odds Ratios for Racial/Ethnic Groups Calculated per Each Education Level, Controlling for Age, BMI, Insurance, Neonatal Birth Weight and Presentation

**Table 1.** Primary CD Rates by Education Levels and Racial/Ethnic Groups

|  | Blacks | Whites | Hispanics | Asians | Total |
|---|---|---|---|---|---|
| Less than High School | 24.06% [1] | 21.23% | 21.39% | 27.20% [1] | 291,325 |
|  | (12,054/50,096) | (21,514/101,325) | (27,905/130,478) | (2,564/9,426) |  |
| High School Graduate | 29.89% [1,2] | 26.79% [2] | 26.23% [1,2] | 27.67% [1] | 1,211,550 |
|  | (63,445/212,269) | (163,110/608,738) | (90,979/346,848) | (12,091/43,695) |  |
| College Graduate | 36.35% [1,2] | 28.18% [2] | 31.95% [1,2] | 30.26% [1,2] | 907,989 |
|  | (24,988/68,748) | (173,278/614,863) | (39,117/122,434) | (30,847/101.944) |  |
| Advanced Degree | 40.60% [1,2] | 28.78% [2] | 34.78% [1,2] | 30.13% [1] | 420,201 |
|  | (9,789/24,112) | (81,352/282,685) | (11,561/33,245) | (24,148/80,159) |  |
| Total | 355,225 | 1,607,611 | 633,005 | 235,224 | 2,831,065 |

[1] Within education comparison: difference from Whites with the same education level; statistically significant (p<0.001).
[2] Within race/ethnicity comparison: Difference from lower education level within the same race/ethnicity; statistically significant (p<0.001).

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## 26 Racial disparities in post-operative pain experience and treatment following cesarean birth

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**OBJECTIVE:** To evaluate racial/ethnic differences in post-operative pain experience and opioid medication use (morphine mg equivalent (MME)) in the first 24 hours following cesarean birth.

**STUDY DESIGN:** This was a retrospective cohort study of women who underwent cesarean delivery at Meriter Hospital in Madison, WI between 01/01/2016 and 12/31/2017. A total of 2228 opioid-naive women were included. Pain assessment utilized all recorded pain scores (assessed on a 0-10 scale) in the first 24 hours post-delivery, which were abstracted manually. Linear regression was used to analyze the impact of race/ethnicity on pain and MME use.

**RESULTS:** In multi-variate analysis non-Hispanic (NH) Black women reported higher average pain scores (coefficient: 0.629, 95% CI [0.414-0.844], p<0.001) (Table 1) than NH White women, but received similar quantities of MME (coefficient: 0.13 mg, 95% CI [-5.12-5.38], p=0.961) (Table 2). NH Asian women had similar reported average pain scores to NH White women (coefficient: -0.02, 95% CI [-0.218-0.179], p=0.845) (Table 1), but received less MME (coefficient: -7.44 mg 95% CI [-12.28- -2.59], p=0.003) (Table 2).

**CONCLUSION:** Despite reporting higher average pain scores, NH Black women did not receive higher quantities of MME. NH Asian women received lower quantities of MME despite reporting similar pain scores to NH White women. These differences suggest disparities in post-operative pain management for women in these minority populations. Further investigation into patient perspectives on pain management in the postpartum period and strategies for interventions to reduce these disparities are warranted.