

Racial Residential Segregation and Prenatal Depression among US-born and Non-US-born Pregnant Individuals

Background

- Existing literature suggest that racial residential segregation is associated with depression, yet findings are sparse among pregnant individuals and differ by race and ethnicity.¹
- Previous analysis documented an association between high racial residential segregation and greater odds of prenatal depression among Black individuals, yet lower odds among Asian, Hispanic, and White individuals.²
- Observed racial and ethnic differences could be predicated on factors such as maternal nativity (US-born vs. Non-US-born); few studies suggest non-US born individuals have a lower risk of prenatal depression than US-born individuals.³

Study Aims

- To examine the association between racial residential segregation (low, medium, high) and prenatal depression diagnosis by maternal nativity among Asian, Hispanic, non-Hispanic Black, and non-Hispanic White pregnant individuals

Methods

Study Setting, and Population: Pregnant Kaiser Permanente Northern California (KPNC) members who resided in CA between January 1, 2013, and December 31, 2019, with information on race, ethnicity, and country of birth

Study Measures

- Racial Residential Segregation:** Measured using **Getis-Ord Gi*** statistic
 - Getis-Ord Gi* statistic:** Census tract-level measure of clustering using geocoded address at the start of pregnancy.
 - categorized low (z-score <1.96), medium (z-score 0-1.96) high (z-score >1.96)
 - calculated separately for each race and ethnicity group
- Maternal Nativity:** Ascertained by country of birth, defined as US-born and Non-US-born
- Prenatal Depression:** Clinical diagnosis based on ICD-9/10 codes documented between 1st day of LMP to the day prior to a live birth
- Confounders:** Maternal age, partnered status, smoking, alcohol, and drug use in early pregnancy, neighborhood deprivation

Statistical Analysis

- Multivariable modified Poisson regression models with robust standard error calculated adjusted relative risks (aRR) & 95% CI
- Analysis was stratified by race, ethnicity and nativity. Low racial residential segregation (reference group). SAS 9.4

Residing in a highly segregated neighborhood negatively impacts the mental health of Black pregnant individuals, with the greatest burden observed among US-born Black individuals.

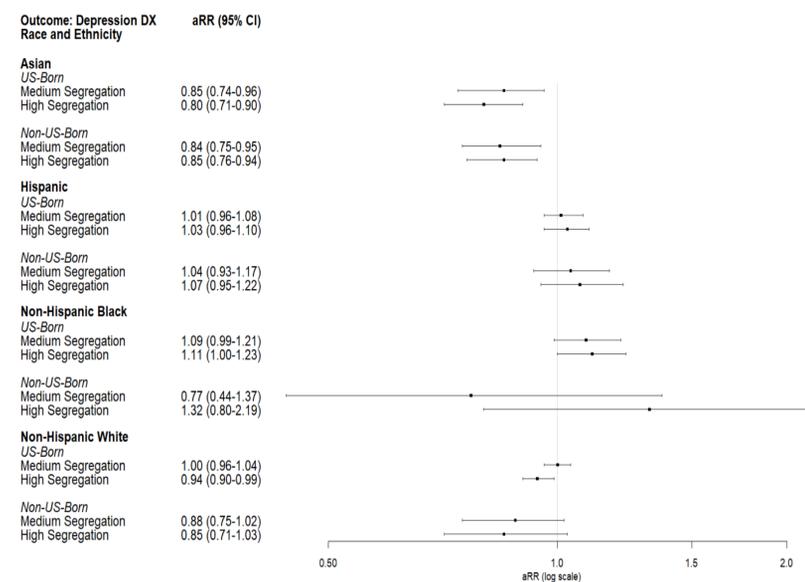
Study Implications

Investigating upstream factors of race, ethnicity, and nativity-related disparities in prenatal depression may assist in:

Development and implementation of culturally appropriate interventions & Guide changes to social and public health investment policies

Results

Table 2. Association of Racial Residential Segregation and Prenatal Depression among US-born and Non-US born Pregnant Individuals



Main Findings

- High (vs. low) racial residential segregation was associated with a **lower risk of prenatal depression** among US-born and non-US-born Asian individuals (aRR=0.80, 95%CI:0.71-0.90; aRR=0.85, 95%CI:0.76-0.94, respectively)
- Though not statistically significant, **an observed increased risk of prenatal depression was observed among US-born and non-US born Hispanic individuals** who resided in high compared to low segregated neighborhoods.
- US-born Black pregnant individuals who resided in highly segregated neighborhoods had a **significantly higher risk of prenatal depression** compared to those who resided in low segregated neighborhoods (aRR= 1.11, 95%CI:1.00-1.23)
- A **lower risk** was observed among US-born and non-US-born White pregnant individuals who resided in high versus low segregated neighborhoods.

Impact on Health Equity

- Study findings add to the body of evidence highlighting the ongoing negative impact of institutional practices rooted in racism on the mental health of Black pregnant individuals
- Using data-driven methods to explore this association
 - (1) helps to contextualize its impact across diverse populations
 - (2) assist in the development of scalable, evidence-based interventions

Funding

Kaiser Permanente Community Benefits Health Policy and Disparities Research grant

Eunice Kennedy Shriver National Institute Child Health and Human Development R01HD101483

Contact

Kendria Kelly-Taylor, PhD, MSPH
Email: Kendria.d.kelly-taylor@kp.org

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N (%)	Total Sample n= 242699	US-Born n= 166272 (68.5%)	Non-US-born n= 76427 (31.5%)
Prenatal Depression	27,044 (11.14)	22,477 (13.5)	4567 (6.0)
Sociodemographic Characteristics			
Race and Ethnicity			
Asian	63,982 (26.3)	20,615 (12.4)	43,367 (56.7)
Hispanic	65,823 (27.1)	45,057 (27.1)	20,766 (27.2)
Non-Hispanic Black	16,633 (6.9)	14,812 (8.9)	1821 (2.4)
Non-Hispanic White	96,261 (39.7)	85,788 (51.6)	10,473 (13.7)
Maternal age (years), mean (SD)	30.1 (5.4)	29.6 (5.5)	31.4 (4.9)
Medicaid Insurance	24,588 (10.2)	19,477 (11.7)	5111 (6.7)
Partnered Status			
Partnered	112,303 (45.5)	70,128 (42.2)	40,156 (52.5)
Not Partnered	29,389 (11.9)	24,592 (14.8)	4385 (5.7)
Maternal Education Level			
Less than high school	6947 (2.9)	3620 (2.2)	3327 (4.4)
High school/GED	36,575 (15.1)	26,382 (15.4)	10,194 (13.3)
Some College	67,049 (27.7)	51,631 (31.1)	15,418 (20.2)
College degree or higher	105,689 (43.6)	68,128 (41.0)	37,561 (49.1)
Pregnancy Health Characteristics			
Nulliparous	108,604 (44.8)	76,123 (45.8)	32,481 (42.5)
Smoking	11,205 (4.6)	9732 (5.9)	1473 (1.9)
Alcohol use	20,885 (8.6)	16,329 (9.9)	4556 (6.0)
Other Substance Use	7761 (3.2)	7131 (4.3)	630 (<1.0)
High NDI quartile (most deprived)	61,800 (25.5)	43,239 (26.0)	18,561 (24.3)