Neighborhood Deprivation Increases the Risk of Post-Induction Cesarean Delivery

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Motivation

- There is some disagreement in the OB/GYN community about expectant management versus labor induction; however, induction is very common (1/3 pregnancies)
- Racial disparities among progression to labor and post-induction cesareans (Black patients have a 50% increased odds of cesarean delivery versus White patients)
- Neighborhood deprivation is a plausible risk factor with limited evaluation to-date

Objective

- To measure the association between neighborhood deprivation and cesarean delivery following labor induction among patients delivering at term (≥ 37 weeks of gestation).

Major Findings

- This study demonstrates an association between neighborhood deprivation and post-induction cesarean delivery after adjustment for individual-level factors
- Patients living in the highest level of neighborhood deprivation were at a 29% increased risk of post-induction cesarean delivery (aOR = 1.29, 95% CI 1.05-1.57) compared with the lowest level of neighborhood deprivation

Methods

- Generalized linear mixed model to calculate the odds of post-induction cesarean delivery among patients in four equally-spaced levels of neighborhood deprivation
- Also, modeled deprivation as a non-linear spline term
- Conducted sensitivity analysis with residential mobility

Results

- The adjusted odds of post-induction cesarean delivery were all elevated compared to the lowest level of neighborhood deprivation:
  - 29% increase in the highest group
  - 28% increase in the high group
  - 20% increase in the moderate group
- The random effect for neighborhood clustering was not significant (p=0.64)
- Our spline analysis (Figure 2) shows a mostly linear relationship between deprivation and post-induction cesarean, not dependent on how we binned deprivation into four categories.
- By rerunning the multivariable model (Table 2) and including residential mobility in the sub-population we had this data for, we saw the three aORs increase (2.12, 2.24, and 1.20)
- Figure 2: Association between neighborhood deprivation and cesarean delivery after adjustment for individual-level factors (Figure 2)

Discussion

- Patients living in neighborhoods with the highest deprivation scores had the highest odds of post-induction cesarean delivery
- A major strength of our study is the large sample size of labor inductions and a cohort from a very diverse spectrum of neighborhood deprivation levels
- Individual-level race/ethnicity serves as a proxy for socioeconomic disparities, namely racism, which is not captured in our deprivation score