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Title

Is Rural Residence a Risk Factor for Preterm Birth in Iowa?

Priority 1 (Research Category)

Women's health

Presenters

Abbie Lund, Barcey Levy, MD, PhD, David Bedell, MD, Yinghui Xu, MS, Mark Santillan

Abstract

Context: Spontaneous preterm birth (sPTB), preterm birth (PTB) without induction, accounts for 70% of all PTB. There are many sociodemographic risk factors (RFs) associated with sPTB, although whether rural residence is associated with sPTB is unclear.

Objective: To assess RFs for sPTB in Iowa and specifically whether rural residence is an independent risk factor (RF) for sPTB.

Study Design: Retrospective cohort study analyzed using a generalized linear mixed multivariate model. Independent variables tested were maternal age (14-<20 years (y), 20-<30 y, 30-<40 y, ≥40 y), body mass index (BMI) (≥30 kg/m², <30 kg/m²), race (Asian, Black, other non-White, White), ethnicity (Hispanic, non-Hispanic), rural vs. urban residence, non-private medical insurance, sex of the baby, maternal smoking, primigravidity, and delivery at Iowa Health Care (IHC) after transfer from a local hospital.

Setting: IHC, Iowa City, IA.

Population Studied: We started with 29,620 deliveries at IHC between May 1, 2009, and May 31, 2023. We excluded deliveries complicated by known RFs for PTB (n=12,646). The final dataset included 16,974 deliveries among 13,339 mothers.

Instrument: Data was extracted from a detailed database of deliveries from May 2009 to the present.

Outcome measure: PTB (<37 weeks) vs. full term birth (≥37 weeks).

Results: Maternal race: 71.8% White, 9.3% Black, 6.4% Asian, and 12.5% other. Hispanic: 8.6%. 89.1% of deliveries were full term, 28.8% of mothers lived in rural areas, and the mean maternal age was 29.6

years. Independently significant RFs for sPTB included the extremes of maternal age (adjusted odds ratio (aOR), 2.14; 95% CI, 1.46-3.14 for age 14 to 19 yrs and aOR, 3.37; 95% CI, 2.04-5.56 for age >40 yrs) compared to age 20-<30 yrs, rural vs. urban residence (aOR, 1.56; 95% CI, 1.28-1.90), maternal smoking (aOR, 2.47; 95% CI, 1.77-3.44), and transfer of the mother to IHC for delivery (aOR, 843.2; CI, 295->999.9). Female sex of the baby (aOR, 0.79; 95% CI, 0.67-0.94) was protective. Race, ethnicity, high BMI, insurance, and primigravidity were not independently associated with sPTB.

Conclusions: Rural residence was a RF for sPTB in this Iowa community. The other significant RFs were in concordance with other studies, except for racial minorities, Hispanic ethnicity, and high BMI not being significant. Further research is needed to help explain the underlying factors associated with rural residence that may have a more direct causal relationship with sPTB.

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