

Sociodemographic and Behavioral Determinants of Hospitalizations for Labor and Delivery Complications in an Urban Health System

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Background: The United States (US) has the highest maternal mortality ratio (MMR) among high-income countries, with Indiana having the 3rd highest MMR in the US. For every maternal death, 20 to 30 more experience life-threatening complications. Labor and delivery complications are key contributors to severe maternal morbidity and mortality, costing over \$30 billion. Identifying and addressing underlying social determinants of health (SDOH) are high-impact strategies for improving maternal health outcomes. This study examined a comprehensive group of socio-demographic and behavioral determinants of hospitalization for labor and delivery complications in an urban health system in Northwest Indiana (NWI).

Methods: This retrospective study analyzed data generated from inpatient SDOH screenings in EPIC™ at an urban health system in NWI between January 2021 and April 2024, using the Protocol for Responding to and Assessing Patients' Assets, Risks, and Experiences (PRAPARE). Complications of labor and delivery were determined using ICD-10 Codes. Data analysis utilized IBM SPSS V. 29.0 to produce descriptive statistics, bivariate analysis (Chi-Square, Mann-Whitney, Kruskal Wallis; $p < 0.05$), and multivariate analysis (binary logistic regression; $p < 0.05$).

Results: The sample consisted of 1444 patients who received labor and delivery services, 36.6% of whom experienced complications. Patients were predominantly non-White (54.6%) with a median age of 27. The bivariate analysis revealed statistically significant associations between labor and delivery complications and race ($p < 0.001$), age ($p < 0.001$), insurance type ($p < 0.001$), family income ($p = 0.002$), smoking ($p < 0.001$), postpartum depression risk ($p = 0.006$), co-morbidities ($p < 0.001$), BMI ($p < 0.001$), and hospital ($p < 0.001$). The multivariate analysis found that age (OR=0.957; $p < 0.001$) and former smoking (OR=0.652; $p = 0.007$) remained significant.

Conclusion: Routine hospital-based SDOH screenings and referrals can help identify nonmedical risk and protective factors for complicated labor and delivery, which in turn informs multi-level strategies to improve maternal health outcomes. Future research will validate these findings and further explore SDOH in larger, more diverse samples.