

# **Social, Demographic, and Behavioral Determinants of Prolonged Hospital Stay and Readmissions for Postoperative Complications in an Urban Health Care System**

**Alexis Dres<sup>1,2</sup>, Skyler Thompson<sup>1,2</sup>, Maggie Sullivan<sup>2</sup>, Baraka Muvuka<sup>2</sup>, Jonathan Guerrero<sup>2</sup>**

<sup>1</sup>Shared first authors

<sup>2</sup>Indiana University School of Medicine - Northwest

## **Background**

The relationship between postoperative complications and social determinants of health (SDOH) is a priority issue with implications on quality of care (QOC). Extended length of stay (LOS) and readmissions (RA) are critical QOC indicators, prompting initiatives such as the Hospital Readmission Reduction Program. Surgical outcome disparities in urban settings persist yet remain underexplored. This study examined how SDOH influence readmissions and prolonged LOS among patients experiencing postoperative complications, as part of an academic-health system collaboration in Northwest Indiana.

## **Methods**

This retrospective study analyzed an EPIC™-generated dataset with SDOH, demographics, health behaviors, and outcomes of adult inpatients hospitalized for postoperative complications at 3 urban hospitals between January 2021 and April 2024. Data analysis comprised descriptive, bivariate (Chi-Square;  $p < 0.05$ ), and multivariate analysis (linear and binary logistic regression;  $p < 0.05$ ) using SPSS 29.0. The study received exemption by Indiana University Human Research Protection Program (IRB # 14040) on 1/28/2022.

## **Results**

The study included over 900 patients, with 565 readmissions (RA) and 337 extended LOS cases. Patients were primarily over 50 years old (81.8% RA, 81.4% LOS), White (69.4% RA, 86.3% LOS), and publicly-insured (74.8% RA, 74.7% LOS). Bivariate analysis revealed significant associations between postoperative complications and age ( $p < 0.001$  RA,  $p < 0.011$  LOS), veteran status ( $p = 0.022$  RA,  $p = 0.058$  LOS), insurance type ( $p < 0.001$  RA), smoking status ( $p < 0.001$  RA,  $p = 0.026$  LOS), and BMI ( $p = 0.002$  RA). In multivariate analysis, former smoking (OR = 2.144,  $p < 0.001$ ), underweight (OR = 4.131,  $p = 0.006$ ), and public insurance (OR = 3.295,  $p < 0.001$ ) remained significant across all readmission durations.

## **Conclusion**

This research highlights SDOH and health behaviors associated with prolonged hospital stay and readmissions among urban patients following postoperative complications. Policies addressing these factors before and after surgery may mitigate adverse outcomes.