

Examining In-Hospital and Post-Discharge Surgical Complications Following Cardiac Interventions in Northwest Indiana

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Introduction: Post operative complications contribute to prolonged hospital stay and adverse outcomes. While prior research has primarily focused on in-hospital cardiac intervention outcomes, the impact of Social Determinants of Health (SDOH) on post-discharge surgical complications remains underexplored. This study examined in-hospital and post-discharge surgical complications following cardiac interventions in Northwest Indiana (NWI).

Methods: This retrospective cross-sectional study analyzed a limited dataset of patients who underwent a cardiac intervention within three hospitals in NWI during January 2021-March 2025. SDOH data were generated from routine EPIC-based SDOH screenings using the Protocol for Responding to and Assessing Patients' Assets, Risk, and Experiences (PRAPARE). Cardiac interventions and surgical complications (in-hospital and post-discharge) were identified using ICD-10 codes. Data analysis comprised bivariate (Chi Square) and multivariate analysis (Multinomial Logistic Regression) using SPSS v31.0. This study was exempted by Indiana University Human Research Protection Program (IRB#14040).

Results: The sample included 8993 patients who were primarily white (62.1%), female (55.5%), 75 and older (29.7%), English-speaking (96.1%), and publicly insured (78.6%). Bivariate analysis revealed significant associations between both in-hospital and post discharge surgical complications with multiple demographic (e.g., age, ethnicity, race, language, insurance type), social (e.g., family income, housing risk, transportation needs), and health factors (e.g., smoking, BMI, and emergency department (ED) disposition). Multivariate analysis found that surgical complications were significantly associated with public insurance ($p=0.045$; $OR=2.195$), family income ($p=0.008$; $OR=1.000012$), ED disposition-observation ($p=0.007$; $OR=0.502$), and length of stay ($p<0.001$; $OR=1.084$). Specifically, in-hospital surgical complications were significantly associated with family income ($p=0.046$; $OR=1.000013$), obesity ($p=0.047$; $OR=3.031$), length of stay ($p<0.001$; $OR=1.093$) while post-discharge surgical complications were significantly associated with public insurance ($p=0.035$; $OR=3.403$), ED disposition-observation ($p=0.003$; $OR=0.348$), and length of stay ($p<0.001$; $OR=1.070$).

Conclusion: This study addresses a research gap on post-discharge surgical complications and the influence of SDOH, highlighting opportunities for SDOH integration into institutional practices and medical education.