Socio-Demographic and Behavioral Predictors of Admission for Kidney Disease in an Urban Hospital in Northwest Indiana

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Background: The CDC estimates more than 1 in 7 American adults have Chronic Kidney Disease (CKD) and nearly 800,000 live with End-Stage Renal Disease (ESRD); the majority of whom require dialysis. Current literature demands further exploration on how social determinants of health (SDOH) influence inpatient and emergency services utilization for CKD/ESRD-related exacerbations. This study examined socio-demographic and behavioral factors associated with hospital admission for CKD/ESRD. It is part of a three-phased Community-Based Participatory Research (CBPR) partnership between IUSM-NW and St. Mary Medical Center (SMMC) to examine and address relationships between SDOH, patient demographics, health behaviors, and health outcomes from January 2022-January 2025.

Methods: This retrospective study analyzed a limited dataset generated by SMMC from EPIC™ with SDOH, demographic, health behavior, and health outcomes data obtained from adult inpatients between January 2021 and March 2023. CKD/ESRD was determined by admission diagnosis ICD-10 Code N18. Data analysis utilized SPSS 29.0 to produce frequencies, Chi-Square tests ($p < 0.05$), and a binary logistic regression ($p < 0.05$). This study was exempted by Indiana University Human Research Protection Program (IRB # 14040).

Results: This study included 10,953 inpatient admissions involving predominantly white (78.4%) and older adult (68 ± 21) patients. CKD/ESRD represented 96 admissions. The bivariate analysis found a significant association between CKD/ESRD admissions and age ($p < 0.001$), race ($p < 0.001$), sex ($p = 0.008$), insurance type ($p = 0.030$), and smoking tobacco use ($p = 0.004$). After adjusting for all factors, being Asian (OR=12.172, $p < 0.001$), Black (OR=3.702; $p < 0.001$), female (OR=0.518; $p = 0.003$), publicly insured (OR=2.76; $p = 0.014$), and former smoking (OR=1.606; $p = 0.045$) were significantly associated with CKD/ESRD admission.

Conclusions: This study revealed several demographics, SDOH, and health behaviors associated with CKD/ESRD admission in an urban hospital. Uncovering predictors of CKD/ESRD admission enables focused interventions to decrease admissions. The next CBPR phases will apply advanced statistical analyses to further explore these relationships and co-develop interventions.