Disparities in colorectal cancer: Measuring spatial accessibility, screening, and surveillance outcomes in South Carolina

Abstract

The purpose of this dissertation project is to add to the growing literature about the multi-faceted aspects of colorectal cancer (CRC) prevention and related disparities. We focused on the spatial distribution of facilities performing screening services to identify areas that underutilize colonoscopy screening. Next, we examined how the food and physical activity environment affects precursors of CRC by considering plausible pathways. Finally, we explored if access to health insurance reduced the racial disparity of receiving a timely surveillance colonoscopy after a CRC diagnosis.

We utilized the SC Ambulatory Surgery Discharge Database, an all-payer, population-based outpatient dataset with colonoscopy records from 2000 – 2014. To identify individuals with a personal history of CRC, we used the SC Central Cancer Registry. We used the Colorectal Cancer Prevention Network screening cohort of low-income, uninsured adults in SC to study colorectal polyps. We paired these unique datasets with innovative analysis methods like two-stage Bayesian hierarchical logistic regression, causal mediation analysis, and loglinear regression.

We were able to create catchment areas (CAs) for all facilities in SC performing screening colonoscopies and found that only a small proportion of ZIP codes were not included in any CA. Aspects of the food and physical activity environment had a direct, protective effect on having colorectal polyps. Finally, we found that increased access to health insurance helped to diminish the racial disparity in receiving a timely surveillance colonoscopy.

Overall, this dissertation was able to address gaps in the literature, particularly providing risk and prevalence estimates for the state of South Carolina (SC). This work lays the foundation for addressing screening and surveillance capacity in SC and understanding the individual role within unhealthy environments.