Evaluation of Outpatient Pharmacogenomic Medication Prescribing Patterns in Relation to Community-Level Social Determinants of Health

Alaa Radwan, MS[1], Chris Roeder, MS[2], David P Kao, MD[2,3], Heather D Anderson, PhD[1, 3], James L Martin, PharmD, MPH[1, 3], Erica L Woodahl, PhD[4,5], Christina L. Aquilante, PharmD[1, 3]

[1]University of Colorado Skaggs School of Pharmacy and Pharmaceutical Sciences, Aurora, CO; [2]University of Colorado School of Medicine, Aurora, CO; [3]Colorado Center for Personalized Medicine, University of Colorado Anschutz Medical Campus, Aurora, CO; [4]University of Montana Skaggs School of Pharmacy, Missoula, MT; [5]L.S. Skaggs Institute for Health Innovation, University of Montana, Missoula, MT.

Understanding the relationship between social determinants of health (SODH) and PGx medication prescribing patterns may help facilitate equitable PGx implementation. We compared the prescribing frequencies of PGx medications among those experiencing different levels of social deprivation and social vulnerability in Colorado (CO). We conducted a retrospective analysis of adult patients prescribed at least one PGx medication in an outpatient setting at UCHealth in 2018. We evaluated the prescribing frequencies of 105 CPIC level A, A/B, and B medications. Social deprivation was determined using the Robert Graham Center's social deprivation index (SDI). Social vulnerability was determined using the CDC's social vulnerability index (SVI). SDI and SVI scores are percentile ranks indicating the extent of disadvantage in a community, with higher SDI and SVI scores indicating higher disadvantage. We used logistic regression to assess the relationship between SDI and SVI scores and the likelihood of being prescribed three or more PGx medications in an outpatient setting, while adjusting for demographics, geographic factors, and comorbidities. The analysis included 84,721 patients, with 6.4% residing in a CO rural area, 41.1% males, 84.3% white, 9.5% Hispanic, and mean age=55±17 years. The mean number of PGx medications prescribed was 1.47±0.81 and 10.1% of patients were prescribed three or more PGx medications. The median SDI and SVI scores in our cohort were 30 and 24, respectively, which are lower than the national median of 50. After adjusting for covariates, SVI score was significantly associated with being prescribed three or more PGx medications (OR 1.10; 95%CI:1.0-1.20; p=0.04), while SDI score was not associated with the outcome (OR 1.0; 95%CI:1.0-1.0; p=0.81). SVI, but not SDI, score was a modest predictor of yearly PGx medication burden in the outpatient setting. Additional studies evaluating SODH, including SVI, in relation to PGx medication prescribing and testing are needed in diverse patient populations.