Name: Marjorie Gondré-Lewis Email: mgondre-Lewis@howard.edu

Neurogenetic Risk for Opioid Use Disorder (OUD) As a Function of Ethnicity: Relevance to Precision Addiction Medicine

Marjorie C. Gondré-Lewis[1],
Kenneth Blum[2], and
Tomilowo Abijo[1]

[1]Developmental NeuroPsychoPharmacology Laboratory, Department of Anatomy, Howard University College of Medicine;
[2]Division of Addiction Research and Education, Center for Sports, Exercise and Mental Health, Western University Health Sciences

Opioid use disorder (OUD) and other substance use disorders (SUDs) continue to significantly impact non-White urban dwelling individuals who have experienced substantial opioid overdose deaths (OODs) this past decade. As precision treatments are sought, it is important to consider substrates and gene variants associated with OUD for relevance to specific ethnicities. Here, we evaluated a well-known genetic addiction risk score (GARS) paradigm, previously validated in a White, European population, and used in several settings including pain clinics, alcohol treatment and substance use treatment centers. We recruited a cohort of 139 mostly Black individuals with or without OUD/SUD, with or without co-morbid HIV, who were genotyped for risk allele polymorphisms in: DRD1, DRD2, DRD3, DRD4, OPRM1, COMT, 5HTLLPR, DAT1, GABRB3, MAOA. The GARS threshold for association with SUD did not differ in control or SUD groups. However, 4 of the risk alleles showed a prevalence in participants of African ancestry. Furthermore, the resting state brain connectivity profiles assessed with rsfMRI differed based on allelic expression. Therefore, precision-based approaches using polygenetic 'risk' scores must be evaluated for relevance to specific ethnic groups whose risk profiles may differ from that generated from the Euro-centric literature. In addition, rsfMRI profiles of the connected functional brain regions may lend additional insight into impact of genetic on connectivity, and these brain regions or connected systems could provide a target for therapeutics.