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Abstract Title

Antidepressant-Induced Behavioural Activation: A Preliminary Analysis of Demographics and Pharmacogenetic Profiles of the PGx-SImBA and PGx-AID Study Cohorts

Background

Antidepressants such as selective serotonin reuptake inhibitors (SSRIs) are frequently used for depression, anxiety, and obsessive-compulsive disorder in children and youth. Although SSRIs are generally effective and well-tolerated, they don't work for everyone and can cause unwanted behavioural adverse effects in some children.

Objective

We aim to compare the genetic profiles of children who experienced behavioral activation ("cases") with those who did not ("controls").

Methods

Participants aged 6-24 years in Manitoba with a history of SSRI use are being recruited since July 2025 through the Pharmacogenomics of SSRI-Induced Behavioural Activation in Children and Youth (PGx-SImBA) study. The replication cohort, Pharmacogenetics of Antidepressant-Induced Disinhibition (PGx-AID), is recruiting participants primarily from Alberta. Here, we describe the demographics of the two cohorts and pharmacogenetic profiles of the PGx-AID cohort for three genes (CYP2D6, CYP2C19, CYP2B6) that have genotype-based guidelines for SSRIs. Descriptive statistics were used to summarize demographics, SSRI utilization, and the proportions of actionable genotypes (i.e., those requiring a change in drug or dose).

Results

95 participants were included in the analysis, where 36 were from PGx-SImBA (66.67% cases) and 59 from PGx-AID (72.89% cases). 91.7% of PGx-SImBA and 67.8% of PGx-AID participants were females. A majority of the participants from both cohorts were of European descent. Fluoxetine was the most commonly used (52.8%) SSRI in the PGx-SImBA cohort, followed by sertraline, escitalopram, citalopram, and paroxetine. In PGx-AID, sertraline was the most commonly taken (59.3%), followed by fluoxetine, escitalopram, fluvoxamine, and citalopram. Among the 59 participants included in this analysis from the PGx-AID cohort, 88.1% had an actionable CYP2C19, CYP2D6, or CYP2B6 genotype (55.9% for CYP2C19, 52.5% for CYP2D6, and 50.8% for CYP2B6).

Conclusion

Early data suggest that the majority of participants carry at least one actionable pharmacogenetic variant, highlighting that genetic variation could influence SSRI treatment outcomes in children and youth.

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