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Abstract Title

Pharmacogenetic Profiles and Implications for SSRI Prescribing in Children and Young Adults: Findings from the PGx-SPaRK Study

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Background

Selective serotonin reuptake inhibitors (SSRIs) are commonly prescribed to treat depression, anxiety, and

obsessive-compulsive disorder in children and youth. Although generally effective and well tolerated, treatment response varies, and some individuals experience adverse effects. Pharmacogenetics (PGx)-guided prescribing incorporates genetic factors that influence medication response and may help optimize SSRI therapy.

Objective

We aimed to characterize the demographic and pharmacogenetic profiles of children and young adults with a history of SSRI use enrolled in the Pharmacogenomics-Supported Prescribing in Kids (PGx-SPaK) study and estimate the prevalence of actionable pharmacogenetic variants.

Methods

Participants aged up to 24 years who were recruited through the PGx-SPaK (NCT04797364) study, a mirror-image PGx implementation trial across Western Canada, were included in the analysis. Cohort demographics, SSRI utilization, and pharmacogenetic profiles for CYP2D6, CYP2C19, and CYP2B6 were summarized. Descriptive statistics were used to summarize participant characteristics, SSRI use, and the proportion of actionable genotypes (leading to a change in drug and/or its dose) based on Clinical Pharmacogenetics Implementation Consortium (CPIC) and Dutch Pharmacogenetics Working Group (DPWG) guidelines.

Results

A total of 1,550 participants were included in the analysis. Overall, 57.4% were female. The mean age at enrolment was 14.3 ± 3.9 years; 27% were aged ≤ 13 years, 43% were 14-17 years, and 30% were 18-24 years. Most participants were of European ancestry. Fluoxetine was the most frequently used SSRI (64.5%), followed by sertraline, escitalopram, fluvoxamine, citalopram, and paroxetine. Overall, 70.4% of participants carried at least one actionable CYP2D6, CYP2C19, or CYP2B6 genotype.

Conclusion

A substantial proportion of children and young adults with a history of SSRI use carried at least one actionable pharmacogenetic genotype. These findings demonstrate that actionable pharmacogenetic variants are common among children and young adults with a history of SSRI use and support the potential utility of pharmacogenetic testing to inform SSRI prescribing.