Behavioral Predictors of Childhood Methylphenidate Use From 4 to 11 Years in a General Population Sample

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Abstract

Attention deficit-hyperactivity disorder (ADHD) in children is recognized as a chronic condition for which prolonged stimulant use, most notably methylphenidate, is an effective treatment option. However, there remains limited information on evolving patterns of methylphenidate use in children over time. In addition, there is a need for further investigation of factors that influence childhood methylphenidate use. This is important to address concerns related to the appropriate use of methylphenidate only for children who present problems of hyperactivity and/or inattention that interfere with everyday functioning.

- Objectives: The first objective was to model developmental trajectories of methylphenidate use over a 6-year period from ages 4-5 to 10-11 years. The second objective was to identify behavioral and socio-demographic predictors of children's methylphenidate use over time.

- Participants: Five data collection cycles of a Canada-wide survey of children were used to track developmental trajectories of methylphenidate use and identify predictors of use. Children were 2-3 years old

at the first data collection cycle in 1994 and 10-11 years old at the fifth data collection cycle in 2002.

- Measures: Predictor variables included socio-demographic variables (e.g., parental education, household income) and child behavior ratings (e.g., hyperactivity, inattention, disruptive behaviors) collected through personal interviews with mothers at the first data collection cycle. The outcome variable was maternal responses to an interview question on children's methylphenidate use at each data collection cycle. We only used data on methylphenidate use from cycle 2 (1996) to cycle 5 (2002).

- Data Analyses: Group-based semi-parametric mixture modeling was used to estimate developmental trajectories of childhood methylphenidate use and to identify statistically significant predictors of methylphenidate use over time.

- Results: Three developmental trajectories of childhood methylphenidate use were identified: none (92.8%); slow-rising (6.1%); and fast-rising, chronic (1.1%). Paternal education was a statistically significant predictor for children in the slow-rising methylphenidate use group. Statistically significant predictors for children in the fast-rising, chronic methylphenidate trajectory group were maternal education; high hyperactive behavior; and low prosocial behavior.

- Conclusions: Approximately 7 in 100 of children were using methylphenidate over a 6-year period from 4-5 to 10-11 years of age. Increases in use were more pronounced at 6-7 years, an age which may correspond with increasing classroom demands for sustained attention and decreased motor activity. Overall, socio-demographic variables were not strong predictors of children's methylphenidate use. High hyperactivity and low prosociality predicted children's membership in the fast-rising, chronic methylphenidate use group. These preliminary findings suggest that methylphenidate is not being inappropriately used for children presenting with disruptive problems and that it is being inadequately used to treat children who may be exhibiting attentional problems. It will be important to continue examining these behavioral variables and to test possible interactions in order to better clarify findings.