Summary Report

Academic, health and healthcare utilization outcomes in New Brunswick grade school students prescribed long-acting stimulants for the management of ADHD: An administrative data study

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NB-IRDT New Brunswick Institute for Research, Data and Training

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Why is This Study Important?

Attention-deficit/hyperactivity disorder, also known as ADHD, is a common neurodevelopmental disorder that interferes with individual functioning or development. It is often characterized by an ongoing pattern of three particular symptoms: inactivity, hyperactivity and impulsivity.

Cases of ADHD are being diagnosed with increasing frequency, especially in school-aged children and youth – and with this rise in diagnoses comes an increase in prescription medications used to treat the symptoms of this disorder.

To help alleviate symptoms of ADHD, many families turn to long-acting stimulants as a prescribed treatment method. Studies show that long-acting stimulants improve core symptoms of ADHD[1] – such as inattention and hyperactivity – making them the gold standard for medical treatment of ADHD.[2] However, their ability to improve functional outcomes associated with ADHD - such as reduced academic achievement or increased risk of injury - is less well understood.

Research on the impact of ADHD medications on functional outcomes is important, as symptom management alone does not necessarily address the many downstream consequences of ADHD that can negatively affect one's health and quality of life.

For individuals who are facing decisions about ADHD treatments, having a better understanding of the ways ADHD can impact children's health and education – and whether long-acting stimulants can intervene and lessen ADHD's negative impacts – is an important step toward making informed decisions backed by evidence.

Estimating the Impact of Long-Acting Stimulants on Functional Outcomes

Unlike short-acting stimulants, which typically start working within 30-45 minutes and wear off in 3-6 hours, long-acting stimulants are designed to work in phases, through an extended release into the bloodstream throughout the day. They are usually considered the first choice for medical treatment of ADHD.

This study used linked administrative data to look at 5 education outcomes and 2 health outcomes among grade school students in New Brunswick...

Education Outcomes

- Report card scores
- Performance on standardized provincial assessment exams
- High school graduation
- Transition to post-secondary education
- School absences

Health Outcomes

- Visits to general practitioners and specialist physicians
- Hospitalization for injury or for stimulant or other drug toxicity

... and it compared outcomes among 3 groups:

Treated	Untreated	No ADHD
Individuals with ADHD who were treated with long-acting stimulants	*Individuals with ADHD who were not treated with long-acting stimulants*	*Individuals who do not have ADHD*

Key Findings: Education Outcomes

We found that treatment with long-acting stimulants positively impacted several measures of academic success, though the benefits we observed were mostly limited to high school students.

Compared to Untreated students, Treated students had:

Higher report card scores

Higher scores were observed in high school, but little difference was seen in K-8 student scores.

Better performance on standardized provincial assessment exams

While little difference was seen in K-8, high school students performed better on math exams.

Higher likelihood of graduating from high school on their first attempt

Treated students were as likely as students without ADHD to graduate on their first attempt.

Higher likelihood of post-secondary enrollment

Treated students were more likely to enroll within 6 months of finishing high school than both Untreated students and students without ADHD.

Less frequent school absences

Untreated K-12 students were absent more frequently, while Treated students had absence rates lower than Untreated students and students without ADHD.

Key Findings: Health Outcomes

Our analyses of select health-related outcomes provide insight into the impact of long-acting stimulants on aspects of health and health resource utilization among school-aged individuals.

↳ In particular, our findings suggest that treatment of ADHD with long-acting stimulants is associated with reduced risk of hospitalization due to injury or drug toxicity, and increased frequency of physician visits.

Compared to Untreated students, Treated students had:

Less frequent hospitalization for injury or for stimulant or other drug toxicity

Hospitalization due to injury was more frequent among Untreated students than those without ADHD, while Treated students had hospitalization rates similar to those without ADHD.

Hospitalization due to stimulant and other drug toxicity was more frequent among Untreated students, and less frequent among Treated students, compared to those without ADHD.

More frequent visits to general practitioners and specialist physicians

This is not surprising, as ADHD is a chronic health condition requiring routine follow-up, with more frequent follow-up among Treated individuals potentially explained by the need for monitoring and adjustment of their medications.

Conclusions

By comparing students with ADHD (Treated and Untreated) to students without ADHD, we observe associations between ADHD itself and negative functional outcomes. These include: decreased academic performance reflected in report card and provincial assessment exam scores, increased frequency of course failure and school absences, and reduced likelihood of high school graduation and transition to post-secondary education. ADHD was also associated with increased frequency of general and specialist physician visits, and increased frequency of hospitalization due to injury or stimulant and other drug toxicity.

Our comparison of Treated and Untreated students suggests that treating ADHD with long-acting stimulants has a beneficial impact on many of these negative consequences of ADHD, including improvement in several markers of academic achievement (primarily in high school) and potentially reduced risk of injury.

While academic improvements were not evident among Treated K-8 students in our analysis, other studies have reported beneficial effects of treatment at these grade levels. One possible explanation for this discrepancy is the 4-point grading scale used in New Brunswick schools for grades K-8, which may have made it difficult to detect a meaningful difference using our approach. Further investigation in this area is warranted.

References

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