

Understanding prevalence and kindergarten behavioural profiles of children with Autism Spectrum Disorder



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Introduction

Health disorder such as Autism Spectrum Disorder (ASD) in early childhood can impact the developmental trajectory of the child¹. Early identification can facilitate access to information and resources that will assist the family and child to achieve the most optimal developmental outcomes. Identification of behavioural profiles common to children with ASD in preschool and kindergarten can provide helpful information for educational professionals in managing classrooms and promoting inclusion.

For this study, we have linked the data reported by teachers in kindergarten on child's ASD diagnosis and an assessment of child development with administrative data in one Canadian province, Manitoba.

Purpose

1. Determine the concordance of the Early Development Instrument (EDI) and administrative data when identifying children with ASD in Manitoba
2. Examine differences in behavioural profiles of children in five developmental domains by child's diagnosis and teacher's knowledge

Methods

EDI is a teacher-completed questionnaire that provides information on children's developmental status in five domains: physical, social, emotional, language/cognitive, and communication/general knowledge².

- The EDI data including teacher-reported diagnosis of ASD were collected in Manitoba in academic years 2010-2011 and 2012-2013.

Health and education administrative data have been collected on an ongoing basis in Manitoba and are housed through the Manitoba Centre for Health Policy (MCHP).
- These data include, but are not limited to, prescription information, hospitalization records, and codes for diagnoses.

Results

Overall prevalence of ASD in kindergarten:

- Administrative data: 1.16% (289 out of 24,818)
- EDI data: 0.8% (191 out of 24,818)

ASD cases identified by both the administrative data and the EDI data: 37% (177 out of 480)

ASD cases identified prior to kindergarten only by the administrative data: 23% (112 out of 480)

Cases identified only by the EDI data: 2.9% (14 out of 480)

Fair agreement between the EDI and administrative data, $\kappa = 0.40$ (95% CI: 0.36-0.44), $p < 0.0001$

Children with the ASD in administrative data diagnosis were identified at slightly younger ages than those with EDI and administrative data diagnosis, although the difference was not statistically significant.

Table 1: EDI scores of children with ASD identified by both the administrative data and the EDI data (n=177)

EDI domains	Mean	STDV
Physical	6.36	2.14
Social	4.36	2.45
Emotional	5.17	1.58
Language cognitive	5.55	3.18
Communication	2.83	2.76

Table 2: EDI scores of children with ASD identified only by the administrative data (n=112)

EDI domains	Mean	STDV
Physical	7.50	1.78
Social	5.74	2.70
Emotional	5.93	2.08
Language cognitive	7.13	2.78
Communication	5.63	3.59

Results

EDI special needs status identified among ASD cases identified only by the administrative data: 67% (75 out of 112)

Table 3: Differences in mean EDI scores for children with ASD identified only by the administrative data versus children with ASD identified by both the administrative data and EDI data

EDI domains	Effect size of differences in mean scores
Physical	0.58
Social	0.53
Emotional	0.41
Language cognitive	0.53
Communication	0.88

Conclusion

While the two data sources in Manitoba show fair concordance in identifying children with ASD at school entry, there are also many children with ASD diagnosis whose teachers are not aware of this. One of the contributing factors may be a later time of diagnosis. However, more than half of the children in the administrative data only group are identified as having special needs on the EDI which suggests awareness but lack of detailed communication.

Teachers rated the children with ASD identified both on the EDI and in administrative data poorer on all five EDI domains than those of whose diagnosis they were not aware. Even though teacher bias may be one explanation, it is possible that children with earlier diagnosis may have more severe impairments, which also contributes to poorer scores.

These results indicate that the EDI-based diagnosis can be used for population-based analysis, but it likely underestimates prevalence and includes children with more severe diagnoses.