



# Association between autism spectrum disorder and parental immigration among a cohort of preschool children in Manitoba

R Phung<sup>1</sup>, J Burns<sup>1</sup>, M Fridell<sup>2</sup>, A Hanlon Dearman<sup>1</sup>, S Narvey<sup>1</sup>, M. Florencia Ricci<sup>1</sup>

University of Manitoba, Department of Pediatrics<sup>1</sup>  
University of Manitoba, Faculty of Arts-Sociology<sup>2</sup>

## INTRODUCTION

- In developed countries the reported prevalence of Autism spectrum disorder (ASD) is estimated at 1.5%. Recent studies show rates of ASD are increasing.<sup>1,2</sup>
- Several international studies report an increased prevalence of ASD among children of immigrant families<sup>3-6</sup>
- Despite Canada's high rates of immigration, studies examining associations between autism & immigration have not been done.
- The Rehabilitation Center for Children (RCC) is the main referral site for evaluation of children with presumed and confirmed ASD in Manitoba. The centralized nature of the referral site allows the RCC clinical database to capture nearly all preschool children diagnosed with ASD in Manitoba.

## AIM

- Primary Objective:** To determine the relative proportion of children diagnosed with ASD at the RCC whose parents are immigrants to Canada and to compare that to the known proportion of immigrants within the community based on census data.
- Secondary Objective:** To compare demographic and medical characteristics of children with ASD whose parents are immigrants to those whose parents are born in Canada.

## METHODS

- We conducted a retrospective chart review of 1865 electronic records identifying all children aged <6 years diagnosed with ASD at RCC between May 2016-September 2021
- Data on patient demographics, diagnostic evaluation, medical history, and parental immigration was collected and reviewed through EMR
- Descriptive statistics including X<sup>2</sup> test was used to compare the relative proportion of children with ASD from immigrant parents to proportion of immigrants in Manitoba based on Census data.

## RESULTS

- Overall, 1865 children were diagnosed with ASD at RCC during the study period
- The proportion of children with ASD from immigrant parents (36%) was greater than the expected proportion (18.3%) of immigrants based on Manitoba 2016 census data (p < 0.001)**
- Boys were found to have significantly higher rates of ASD (78%) compared to girls.
- Mean age at referral was 2.81 years (SD = 1.26) and diagnosis 3.88 years (SD = 2.90). 13.5% were born preterm
- Most common countries of origin of immigrant parents were the Philippines (30.7%), India (11.6%), Nigeria (8.6%), Ethiopia (6.4%)

	Age at Referral (Years, SD)	Family History of ASD (%)	Comorbidities (%)	Global Developmental Delay (%)
Children of immigrants with ASD	2.71, SD = 0.98	17.1	46.8	18
Children of non-immigrants with ASD	2.91, SD = 1.43	35.6	53.9	27.6
P-value	<0.0001	<0.001	<0.001	<0.001

Table 1: Comparison of variables between children diagnosed with ASD belonging to parents who are immigrants to those who are not immigrants

## REFERENCES

- American Psychiatric Association. Diagnostic and statistical manual of mental disorders. 5th ed. Arlington, VA: American Psychiatric Association; 2013
- Autism Speaks [Internet]. [cited 2021 Nov 4]. Available from: <https://www.autismspeaks.org/press-release/cdc-estimate-autism-prevalence-increases>
- Keen D V., Reid F D., Arnott D. Autism, ethnicity and maternal immigration. Br J Psychiatry. 2010;196(4):274-81.
- Linnsand P, Gillberg C, Nilsson Å, Hagberg B, Nygren G. A High Prevalence of Autism Spectrum Disorder in Preschool Children in an Immigrant, Multiethnic Population in Sweden: Challenges for Health Care. J Autism Dev Disord [Internet]. 2021;51(2):538-49. Available from: <https://doi.org/10.1007/s10803-020-04563-8>
- Hager, J.; Williams S. Infantile autism, the incidence of national groups in a New South Wales survey. Med J Aust. 1976;1(10).
- Becerra TA, Von Ehrenstein OS, Heck JE, Olsen J, Arah OA, Jeste SS, et al. Autism spectrum disorders and race, ethnicity

## FINDINGS

- Among children diagnosed with ASD at RCC between 2016 and 2021 there was a **greater** proportion of children with immigrant parents than expected based on MB census data on immigration.
- Children with ASD whose parents were immigrants were **younger** at referral, **less likely** to have a **family history** of ASD, and **less likely** to have comorbid conditions, including **global developmental delay**.
- This study is hypothesis generating and limited due to its retrospective design. Findings will be used for future prospective studies.