International Journal of Population Data Science

Journal Website: www.ijpds.org

Diabetic Ketoacidosis (DKA) at Diabetes Diagnosis in Children (0-18 years) in Ontario, Canada: A Population-Based Retrospective Cohort Study of Health Administrative Data

Mian, O¹, Wenghofer, E², Young, N², and Jaakkimainen, L³

¹Centre for Rural and Northern Health Research, Laurentian University

²School of Rural and Northern Health

³Institute for Clinical Evaluative Sciences

Introduction

Diabetic ketoacidosis (DKA), a life-threatening complication of diabetes, is the leading cause of mortality and disability in children. The high cost of care for DKA and negative consequences of DKA on child's health are known; however, the pediatric DKA trends in Ontario were not studied in the last fifteen years.

Objectives and Approach

To examine time trends of the prevalence of pediatric DKA at diabetes diagnosis and socio-demographic characteristics associated with the DKA risk (child's sex; age; geographic region; rural residence; material deprivation and ethnic concentration) in Ontario, Canada. Person-level de-identified data from the provincial registry for all Ontario children (0-18 years) newly diagnosed with diabetes (type 1 and 2) in 2004-2012 was linked with records in the national discharge abstract database (CIHI DAD) at the Institute for Clinical and Evaluative Sciences (ICES). SAS software (v.9.3) was used for Poisson and logistic regressions.

Results

Of 10,617 children diagnosed with diabetes, 15.5% were diagnosed during a hospital admission for DKA. Prevalence of DKA at diagnosis did not change over the nine-year period (ptrend = 0.99). There were statistically significant within-province regional differences in DKA prevalence at diabetes diagnosis, with the highest prevalence in South-Western Ontario (17.2%). Younger children (0-6 years and 7-12 years) were at higher DKA risk than 13-18 years old children (adjusted odds ratio (OR) 2.5 95% CI 2.2-2.8 and 2.1 95% CI 1.9-2.4). DKA at diabetes diagnosis was associated with material deprivation in young children (0-6 years) (OR 1.9 95% CI 1.4-2.5 for "most deprived" versus "least deprived"). In the older group (13-18 years), boys were at higher DKA risk than girls (OR 1.4 95% CI 1.1-1.7).

Conclusion/Implications

Prevalence of pediatric DKA at diabetes diagnosis in Ontario is among the lowest in the world; however, higher DKA prevalence among children residing in some geographic regions or most deprived neighbourhoods of the province despite the universal access to government-funded health care warrants further research.