

Rising of type 1 diabetes mellitus incidence in Chilean children between 2006 and 2014. Final Results



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Background

Type 1 diabetes mellitus (T1D) incidence in children varies across regions and countries, with rates up to 65/100,000 in Finland. There are no recent epidemiological studies of T1D incidence in South America. Between 1990 - 1999 the DIAMOND study showed an incidence of 7/100,000 in Chilean for children younger than 15 years.

Objetives

To determine the incidence of T1D in children in Chile between 2006 and 2014.

Methods We reviewed mandatory notifications of T1D in Chile's public health system in population younger than 20 years between 2006 and 2014. Data were obtained from the Department of Information Management of the Chilean Ministry of Health and were analyzed according to sex, age, region and season. Time trends of T1D incidence were analyzed by linear and exponential regressions.

Demographic characteristics of T1D new patients in Chile, under 20 years, between 2006 -2014.	
Total patients	4153
Male	2104 (51%)
Age (interquintile range), years (%)	
0-4	561 (13.5%)
5 - 9	1.133 (27.2%)
10-14	1.519 (36.5%)
15-20	940 (22.6%)
Geographical distribution	
North	675 (16.3%)
Central	3002 (72.2%)
South	476 (11.5%)
Season distribution debut	
summer	1020 (24.6%)
autumm	1073 (25.8%)
winter	1155 (27.8%)
spring	905 (21.8%)

Results

A total of **4,153** T1D cases occurred in children under 20 years from 2006 to 2016. Median age was 14 (IQR 10-17). Highest caseload of T1D incidence occurred in winter (28%) and lowest in spring(21%).

The average annual T1D incidence was **12.5/100.000**, with an increase from **10.3 in 2006 to 16.3 in 2012** (β 0.8, 95%CI 0.6-0.9, P=0.001) figure1. A significant increasing linear trend of T1D incidence was observed in groups of **age 0-4 years** (β 0.3, 95%CI 0.06-0.6, $p=0.02$), **5-9 years** (β 0.7 95%CI 0.2 – 1.27, $p=0.009$) and **10-14** (β 0.88, 95%CI 0,62-1.14, $p<0.001$), but not in age 15-19y, a non-significant increasing or decreasing trend was observed (β 0.027, 95%CI -0.31 to 0.37, $p=0.85$) Figure 2

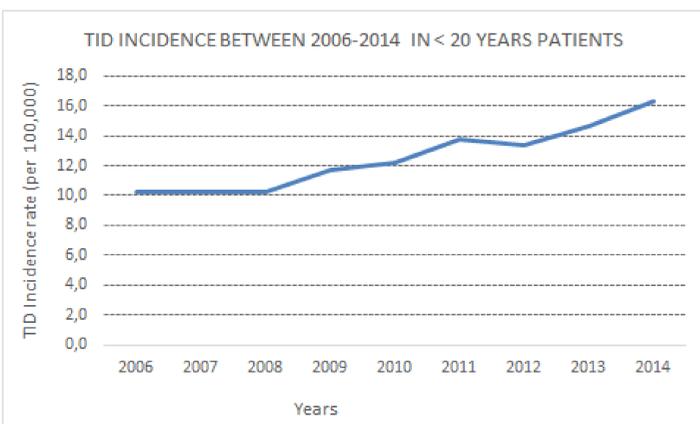


figure1

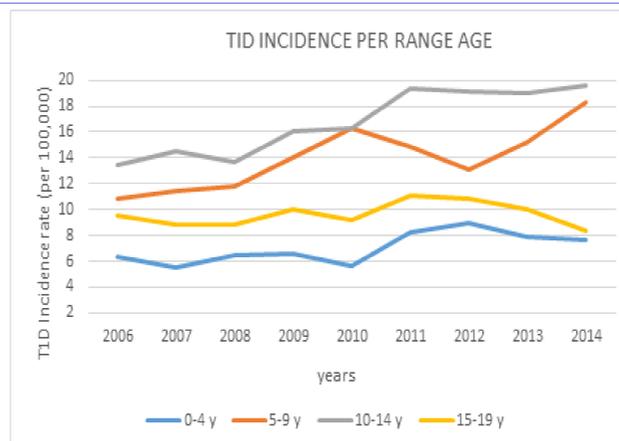


figure2

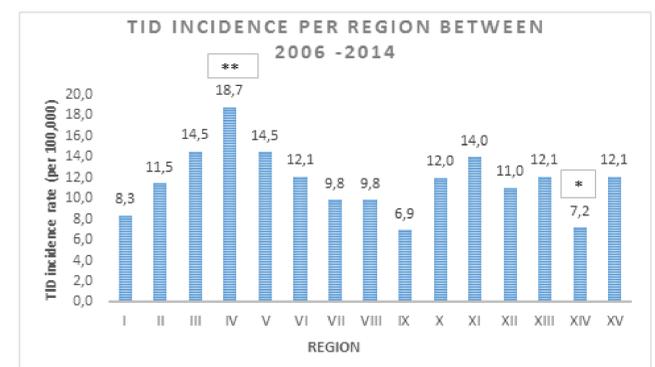


figure 3

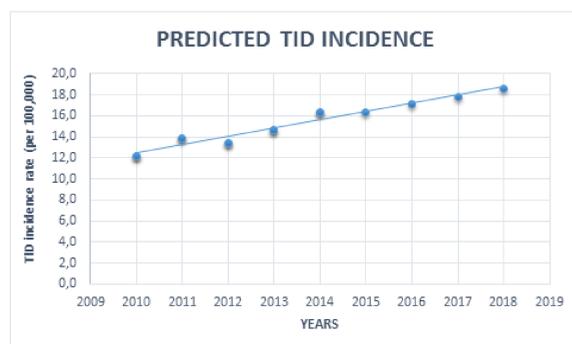


figure 4

The lowest regional incidence of T1D was observed in the Araucanía (IX) and Los Rios (XIV) region. This difference is significant less than the incidence of the Metropolitan region, ($p<0.03$ and $p<0,05$ respectively, with 95% CI), Araucania region has the largest percentage of population of indigenous Mapuche ethnicity

Incidence rates of T1D in Chile are rapidly increasing, particularly in younger age groups. If increasing trends persist we estimate Chile will reach T1D incidence rates of western developed countries in the next decade. (18/100,000 under 15 years in 2018)
The low rate of T1D observed in regions with high Mapuche ethnicity rates may suggest protective genetic factors