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Prevalence of Diabetes among Young and Adolescent Population in Australasian Region

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Review Article

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The International diabetes control and complications trial has recommended use of insulin for the management of type 1 diabetes. The diabetic microvascular complications can be prevented by maintaining the blood glucose levels. Among children the recommended level of HbA1c target is <53 mmol/mol (7.0%). However, the level or stage of target achievement is not widely assessed in the Australasian region. Most of the results are restricted to single center reports with regard to the T1D. Therefore there is the need for the wide scale assessment of the current models of prevention and treatment whether they are delivering the desired results for the reduction of the societal and the individual burden of type 1 diabetes.

The Australasian diabetes data network was established as National T1D registry for the improvement of the clinical outcomes and to set standards of health care across Australasia. The Australasian registry was initiated and started by the Juvenile Diabetes Research Foundation via the T1D Clinical Research Network in collaboration with the Australasian Paediatric Endocrine Group and the Australasian Diabetes Society. Between 2012 and 2015 a number of paediatric sites started contributing to the database building across Australasia and the New Zealand hosted by the University of the Melbourne to capture de-identified and coded longitudinal clinical data for the people suffering from T1D. The same project in the second phase between 2016 and 2019 with funding received from JDRF and the Australian Research Council seven additional centers have started to contribute to the data. In the year 2019 there were a total of eleven pediatrics and seven adult

Phan presented the clinical services of Clinical Immunogenomics Research Consortium Australasia (CIRCA) in the Australasian region. The consortium with expertise in genomics, data science and medicine diagnose and treat patients with congenital immunological disorders. The group analyzes the gene variants by functional validation and customized treatment of patients throughout Australia sites that contribute to the epidemiological data to the ADDDN registry providing representative samples of individuals with T1D who are managed in the tertiary clinical centers.

Both the national and international population based clinical registries collate data on the glycaemic outcomes and the management of diabetes furnishing opportunities to review differences in diabetes care in real world samples over a span of time. The international T1D registries like the T1D Exchange registry of the United States showed very low levels of success of the American Diabetes Association in terms of the glycemic targets among adults. In the Australasian region there is the possibility of the review of the glycemic outcomes in both children and the adults having T1D.

The ADDN audit of children and the adolescent with T1D originating from five different paediatric diabetes centers showed the almost 27% of the children achieved the HbA1c 7% levels in the year 2015. This was expanded in the year 2017 to include the adult sites as well in collaboration with the Australasian diabetes association thus providing larger review of the glycemic outcomes across the age spectrum. This study represents the largest survey of the glycemic outcomes among T1D patients in Australasia and the New Zealand[1].

Due to the increase in the prevalence of obesity and other chronic diseases the incidence of type 2 diabetes also increased particularly among the high risk ethnic groups.

Compared to the adult type 2 diabetes the beta cell function declines faster and the diabetes complications develop earlier among the pediatric T2D patients. Currently there are no consensus guidelines in the Australasian region for the assessment and the management of T2D while the health professionals have to rely on the adult guidelines for prevention and the treatment of the disease. The international paediatric guidelines did not address the adaptations for the patient care among the indigenous backgrounds.

Recommendations have been formulated for advice on the pediatric type 2 diabetes in relation to the screening, diagnosis, health education, target monitoring, health style adaptations, pharmacotherapy, assessment, management of complications and comorbidities and disease prognosis and transition. These recommendations also include dedicated section on te considerations for care of diabetic children and the adolescents from the indigenous backgrounds in the Australasian and the New Zealand region.

However the published international guidelines do not address the challenges and the specifications of the children and the adolescent population with T2D in the Australasian region. These challenges include the diabetes targets, new medications, multidisciplinary care including the endocrinologists for the ongoing care[2].

Recently a survey was conducted to model the care and the workforce for the management of the T1D among children in the Australasian region. The survey included the tertiary and the regional paediatric clinic in the Australia and the New Zealand that care for the children and the adolescents as assessed by the health care professionals. The study by the largest Australasian paediatric T1D workforce survey to date indicated that health care professionals to the patient ratios remained well below the international recommended targets and the this condition remained similar over the past five to seven years. The glycemic outcomes in the populations were below the recommended levels in majority of the patients and the study thus recommended reforms in the models of care and the workforce and institution of systematic benchmarking in both countries for the prevention of chronic and acute complications of T1D[3].

It was identified that there are limited data for mapping of glycemic control of t1D patients in yong and adolescent population across Australasia. Therefore, a research was designed for the extraction of the clinical data from the Australasian region diabetes data network prospective diabetes registries and the inclusion criteria were the individuals with the t1D in the age group of 16 to 25 years at their last recorded healthcare visit with t1D duration of the one year. The study concluded that there was widespread and persistent sub-optimal glycemic control in the young people with t1d in the Australasian region and highlighted the imminent need for the better comprehension of the situation and devise ways and strategies for the healthcare services to support the improvement in the glycemic control in this group of the population[4].

Another study concluded that only minority of the children and the adults achieved the recommended levels of the glycemic goals despite access to the specialist care across majority of the diabetes centers[5]. Recently, pandemic related health crisis in the Australia and observed that the impact of COVID-19 pandemic and the subsequent societal change on the pediatric t1D in Australasian region is not yet fully understood and a collaborative efforts are needed at the national level is required [6].

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