

Special Issue on

## Type 2 diabetes mellitus in pediatric patients

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### Editorial

## Type 2 Diabetes

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### BIOGRAPHY

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He has a MD in medicine, a PhD in experimental medicine specialized in diabetes, and a master degree in nutrition - specialized in obesity. He also has a degree in physical activity. He is also an external reviewer for the Canadian Task Force on Preventive Health Care.

### FOREWORD

Type 2 Diabetes Mellitus (T2DM) in children and adolescents is a new chronic disease facing health care professionals (HCP) [1-7]. With a prevalence of 0.18-1.2/1000 and incidence rates of 0.6-39/100,000 person years, the majority of HCP have had little opportunity to generate clinical experience in the management of hyperglycaemia and risk factors in pediatric patients with T2DM [1-7]. Children from ethnic groups at higher risk for T2DM in their adult populations are those of Aboriginal, African, Arabic, Hispanic or Asian descent [3].

A recent Canadian national survey demonstrated a minimum incidence of T2DM in pediatric populations <18 years of age of 1.54 per 100 000 children per year [7]. Significant regional variation has been observed with the highest minimum incidence seen in Manitoba of 12.45 per 100 000 children per year. In this

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survey, 44% of children with T2DM were of Aboriginal origin, 25% were Caucasian, 10.1% Asian, 10.1% African/Caribbean and the remaining were of other mixed ethnic origin [7].

Recent data from the United States (US) demonstrated an incidence of 8.1 per 100 000 person per years in the 10- to 14-year age group and 11.8 per 100 000 person per years in the 15- to 19-year group. In this survey, the highest rates were found in American Indian, African American, Asian/Pacific Islander and Hispanic pediatric population (in descending order), and the lowest incidence were observed in the non-Hispanic white pediatric population [1]. Currently, the incidence and prevalence of T2DM are increasing among children and adolescents. About 45% of new cases of diabetes mellitus (DM) in youth were estimated to be T2DM. The SEARCH for Diabetes in Youth study (SEARCH) has shown that in the US alone in 2010, over 20 000 individuals below 20 years of age had T2DM. Moreover, the survey predicted that this number may increase up to 30 000 by 2020 and up to 84 000 by 2050 [5].

T2DM in pediatric patients is strongly associated with obesity [8]. However, very little is known about the progression of T2DM in the emerging countries where the prevalence of pediatric obesity has been silently increasing in the last few years. In fact, an increase in the prevalence of pediatric obesity has been documented from 1990 to 2010 in Africa, South America and Asia, but information about its complications in these territories

is limited [2,6]. In 2010, it was estimated that 43 million children were overweight worldwide, and this number is expected to increase up to 60 million by 2020 [6]. Very few therapeutic trials exist to guide clinical practice in T2DM pediatric patients. Therefore, current management guidelines rely largely on data from adult studies and expert consensus [6]. However, information regarding adults with T2DM may not always be applicable to youth with the disease.

As mentioned above, because T2DM in pediatric patients is strongly associated with pediatric obesity current management guidelines rely strongly on those from pediatric obesity [2,6,9,10]. Unfortunately, the literature on the management and treatment for both T2DM and its complications in the pediatric population remains limited. The lack of information about pediatric T2DM may influence the care delivered by HCP. It is hoped with an aggressive approach in the treatment and prevention that we would be able to stop the onset and progression of this devastating disease. This special issue aims to highlight what is known about pediatric T2DM and to try to feed most gaps as possible in our understanding of this condition.

The review does not address in details all the complications associated with T2DM in this population. Minimal inferences are also made on the metabolic syndrome; a disorder closely associated with T2DM. All the articles mentioned address mostly T2DM. This special issue does not address research about T1DM, except when comparisons are required. Similarly, it does not address research about T2DM in adults, but sometimes it is necessary to better document the topics discussed.

In the first article, I will first give you the definition of pediatric T2DM. Then, I will discuss the risk factors and consequences associated with T2DM in pediatric patients. Subsequently, in the second article, I will describe the approaches to prevent T2DM in this age group that are highly comparable to those used to prevent pediatric obesity already discussed in some of my previous publications and books [9-12]. The "6As" model for counseling and motivational interviewing methods in primary care practice validated in obese pediatric patients are two effective methods that can certainly be useful to manage T2DM in pediatric patients. Therefore, they will be discussed in the third article of this special issue on the management of T2DM in pediatric patients. There are only 2 pharmacologic molecules that can be used to treat T2DM in pediatric patients. These 2 molecules will be discussed in the third article as well as few other potential molecules that are still not authorized in children for the treatment of T2DM. Therefore, in the following article (article number 4), it seems reasonable to discuss briefly the difficulties surrounding the clinical research with pediatric patients suffering from T2DM. Similarly, T2DM is difficult to treat that is why I consider useful to introduce in the article 5 a relatively new concept in this area; this concept is the pharmacogenomics of T2DM with the ultimate goal of having a personalize treatment for those patients i.e., being able to

provide a treatment to a patient based on its genetic background; a treatment that will be more efficient and more secure.. The last article (article number 6) is probably the most practical and the most elaborate; it is composed of a case report using questions and answers in order to consolidate the information discuss in the previous articles of this special issue.

To perform this special issue, I first did a literature search, which searches primarily from January 2006 to September 2016. This research in children and adolescents focuses on the following themes: Pediatric T2DM, primary care, diet, physical activity, sedentary behavior, behavior modification, prevention, and T2DM management. I selected the most recent articles to better reflect current knowledge. Selected documents come from Scopus, Medline, Embase and the database of systematic consultation such as Cochrane Reviews.

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### Cite this article

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