

# Evaluation of the epidemiological, presenting and follow-up characteristics and their impacts on the glycemic control in a large cohort of pediatric type 1 diabetes mellitus patients from Southeastern Anatolian Region of Turkey

Mehmet Nuri Ozbek<sup>1,2</sup>, Huseyin Demirbilek<sup>2,3</sup>, Birsen Baysal<sup>4</sup>, Riza Taner Baran<sup>2</sup>, Belma Haliloglu<sup>2</sup>, Murat Ocal<sup>4</sup>

<sup>1</sup>Department of Pediatric Endocrinology, Gazi Yasargil Training and Research Hospital, Diyarbakir, Turkey

<sup>2</sup>Clinics of Pediatric Endocrinology, Diyarbakir Children's State Hospital, Diyarbakir, Turkey

<sup>3</sup>Department of Pediatric Endocrinology, Faculty of Medicine, Hacettepe University, Ankara, Turkey

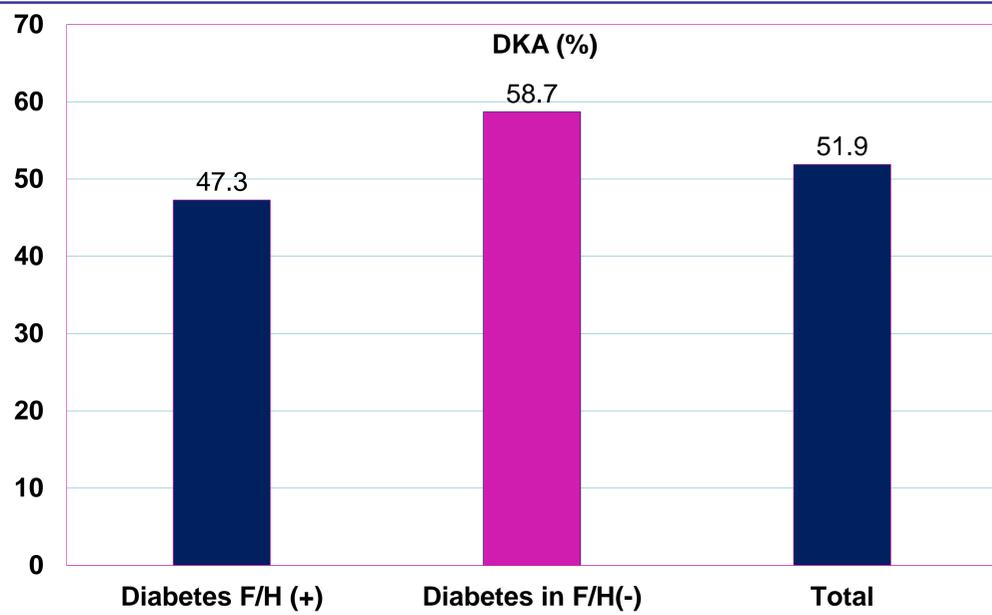
<sup>4</sup>Department of Pediatrics, Gazi Yasargil Training and Research Hospital, Diyarbakir, Turkey

## OBJECTIVES

Type 1 diabetes mellitus (T1DM) is one of the most common chronic disease in childhood. Evaluation of the factors that have impacts on the glycemic control and development of complications would help to develop preventive strategies for management of T1DM patients. Aim of the present study is to evaluate epidemiological, presenting and follow up characteristics and their relationship with glycemic control in a large number of pediatric T1DM patients from Southeastern Anatolian Region of Turkey.

## RESULTS

Number of patients recruited was 538 (292 female, 246 male). Mean age of diagnosis was 8.2±4.3 years. The frequency of presentation with diabetic ketoacidosis (DKA) was 51.9% with no gender discrepancy (p=0.303), while patients with diabetes history at their families had lower rate of DKA at presentation (p=0.040) (Figure 1). Maternal and paternal education status was not found related to glycemic control (p value: 0.267 and 0.087 respectively). Evaluation of glycemic control according to last HbA1c levels revealed a lower HbA1c level in pubertal vs. prepubertal group (p=0.000), LHT(-) vs. LHT(+) group (p=0.003), and patients with ≥3 follow up visit vs. those <3 visits (p=0.002), whereas HbA1c in female vs. male (p=0.079) and patients from rural area vs. urban (p=0.616) was not statistically different. Rate of diabetic nephropathy for prepubertal and pubertal subjects was not statistically different (p=0.169) (Figure 2). Celiac disease was the most common autoimmune disease associated to T1DM, while diabetic nephropathy was the most common microvascular complication (Table 1). Rate of diabetic nephropathy for prepubertal and pubertal subjects was not different (p=0.169).



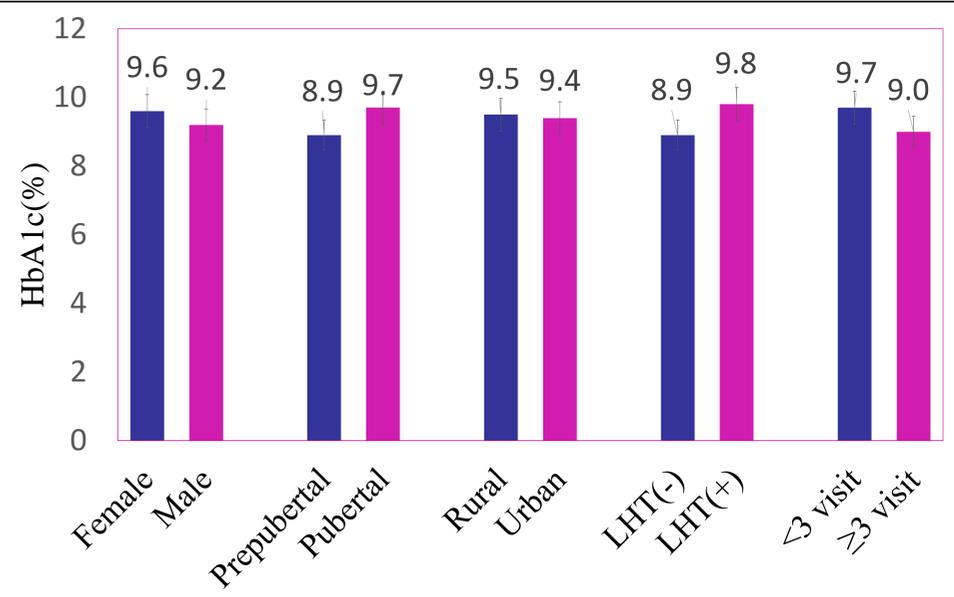
**Figure 1.** Patients with history of diabetes at their families had a lower rate of presentation with diabetic ketoacidosis (F/H: Family history)

## PATIENTS & METHODS

Hospital records of pediatric T1DM patients being followed at Diyarbakir Children's State Hospital and Diyarbakir Gazi Yasargil Training and Research Hospital were retrospectively reviewed. Presenting characteristics (Age, gender, family history of diabetes, history of autoimmune diseases, parental sociodemographic status, presentation with/without ketosis/diabetic ketoacidosis (DKA), follow up characteristics (hypoglycemia incidence (severe hypoglycemia required glucagon administration), HbA1c level, DKA during follow up, autoimmune diseases associated to diabetes) and rate of long-term diabetic complications were evaluated.

**Table 1.** Rate of autoimmune diseases associated to T1DM, acute and chronic complications detected in our cohort

	n(%)
<b>Associated diseases</b>	
Celiac disease (n=375)	40(10.7)
Hashimoto's thyroiditis (n=463)	30(6.5)
<b>Acute complications</b>	
Hypoglycemia required glucagon (n=227)	86(37.9)
DKA episode during follow up (n=288)	65(22.6)
<b>Chronic complications</b>	
Lipohypertrophy (254)	184(72.8)
Diabetic nephropathy (n=212)	24(11.3)
Diabetic retinopathy (n=249)	2(0.8)



**Figure 2.** Evaluation of HbA1c levels according to gender, pubertal status, urbanization, having and not having lipohypertrophy (LHT) and number of follow up visits per year)

## CONCLUSIONS

In our cohort about half of patients was presented with DKA which was lower in cases with history of diabetes at their families. Puberty and having lipohypertrophy were related to poor glycemic control, while increase in regular follow up visit was related to good glycemic control. Promoting patients' regular follow up visits and diabetes education focused on insulin injection techniques are simple but may help to improve glycemic control in our cohort.