CURRENT STATUS OF DIABETES MANAGEMENT , GLYCEMIC CONTROL AND COMPLICATIONS IN CHILDREN AND ADOLESCENTS WITH DIABETES: A REGISTRY-BASED STUDY IN EGYPT. WHERE DO WE STAND NOW? AND WHERE DO WE GO FROM HERE?

Mona Hussein El Samahy , Nancy Samir Elbarbary , Hala Mohammed Elmorsi
Department of Pediatrics, Pediatric Diabetes and Endocrinology Unit ,Faculty of Medicine, Ain Shams University, Cairo, Egypt

INTRODUCTION

Type 1 diabetes is one of the most frequent chronic disease in children and represents a public health challenge globally. Its burden is huge in developing countries where access to diabetes care and necessary insulin are limited and there is lack of a basic means for reaching reasonable glycemic control . However, the true prevalence of diabetes is unknown in Egypt, because of poor infrastructure both in terms of being able to make diagnosis and for health reporting. Due to the paucity of available data about the magnitude of disease , electronic medical records registration of data base of patients has been vital which collects basic, clinical and laboratory measures.

AIM OF THE WORK

This study was primary designed to assess clinical status of the registry participants, metabolic control, acute as well as chronic microvascular complications , presence of concomitant autoimmune diseases and psychological problems in patients diagnosed with diabetes during childhood and adolescence to know where do we stand.

SUBJECTS AND METHODS

Subjects: The Diabetes Registry system was designed by Pediatric Diabetes Clinic, Ain Shams University Hospital in the year 2010(Fig.1 and 2).All children and adolescents following up regularly in the Pediatric Diabetes clinic, Ain Shams University Children's hospital were included in the period between June 2010 and January 2013. The final cohort included 600 children and adolescents (56.5 % females and 43.5% males) who were followed with the diagnosis of diabetes.
*Methods :*All subjects underwent the following:
•*Disease related characteristics:* age at onset of the disease , duration of disease and type of diabetes(type 1 diabetes, type 2 diabetes, maturity-onset diabetes of the young (MODY), neonatal diabetes, and those with a chronic disease (such as thalassemia, cystic fibrosis, drug-induced types) . Also, type of insulin therapy, mean total daily insulin dose, number of injection per day, regimen of insulin therapy (intensive, conventional), insulin availability, accessibility, methods of insulin delivery (pen, vials, pump) , number of visits to a doctor/clinic per year, medication history, frequency of checking of blood glucose, the state of their metabolic control, as well as acute complications (frequency, timing and severity of hypoglycemia, history of developing diabetic ketoacidosis (DKA) and hospital admissions),chronic diabetic complications were recorded and presence of concomitant autoimmune diseases . History of receiving DM education lectures were recorded, the exact lectures attended and if assessment was carried out at the end. History of psychiatric symptoms requiring treatment such as mood or personality disorder (evaluated thoroughly by our clinic psychiatrist).
•*Clinical assessment:* Physical examination includes: anthropometric measures; weight in kg , height in cm and body mass index; blood pressure .
Investigations: Mean random blood sugar, mean pre and post meal blood glucose levels, HbA_1C value, fT4 and TSH levels , Gluten-sensitive enteropathy (GSE) was diagnosed by presence of IgA anti-tissue transglutaminase (IgA-tTG), antiendomysium antibodies, and/or by biopsy findings .Urinary albumin excretion was measured by immuno- turbidimetric .

Fig. (1):Patient Demographic Data Form in the registration system.

RESULTS

• Mean age of patients was 13.29 ±5.05 years, mean duration of diabetes was 6.37±3.64 years(Fig.3) , mean HbA1c was 8.81±4.59%, and 71% had poor glycemic control.
•The majority of the patients (43.09%) were aged between 12 and 18 years followed by those between 7 and 12 years(29.5%). Of the included patients (79.17%) were pubertal while (20.83%) were pre -pubertal .
•The majority (96%) of patients following up in our clinic had type 1 DM, whereas only (1.33%) were diagnosed as type 2 DM , neonatal DM consists of (0.33%) , maturity-onset diabetes of the young (MODY) based on the family history and clinical findings consists of (0.33%) and those with a chronic disease (such as thalassemia, collagen diseases, drug-induced types) consists of 2%.
•Majority of patients were euthyroid (571 95.27%), subclinical hypothyroidism was found in (1.6%) patients, hypothyroidism in (2.8%), and hyperthyroidism in (0.33%) of patients at the time of diagnosis or during follow-up.
• Acute complications included ketoacidosis in 19.7% and severe hypoglycemia in 2.83%. Chronic complications including peripheral neuropathy, retinopathy, and persistent microalbuminuria were present in 6.33%, 1.83%, and 6.83% , respectively. Majority (97.17%) of patients are on intensive regimen of therapy .
•Patients with poor glycemic control had higher disease duration, DKA frequency and microvascular complication. Regular education lecture attendance and regular SMBG were found to have better glycemic control(Table 1).
•Behavioral changes were more prevalent with bad glycemic control representing (69.25%) of studied group of patients and (18.08%) of them had bad school performance. Aggressiveness was noted in (67.17%) after diagnosis, while (15.17%) of our patients don't accept disease . Depression was evident in (50%) while (36.33%) of the studied group had group therapy.
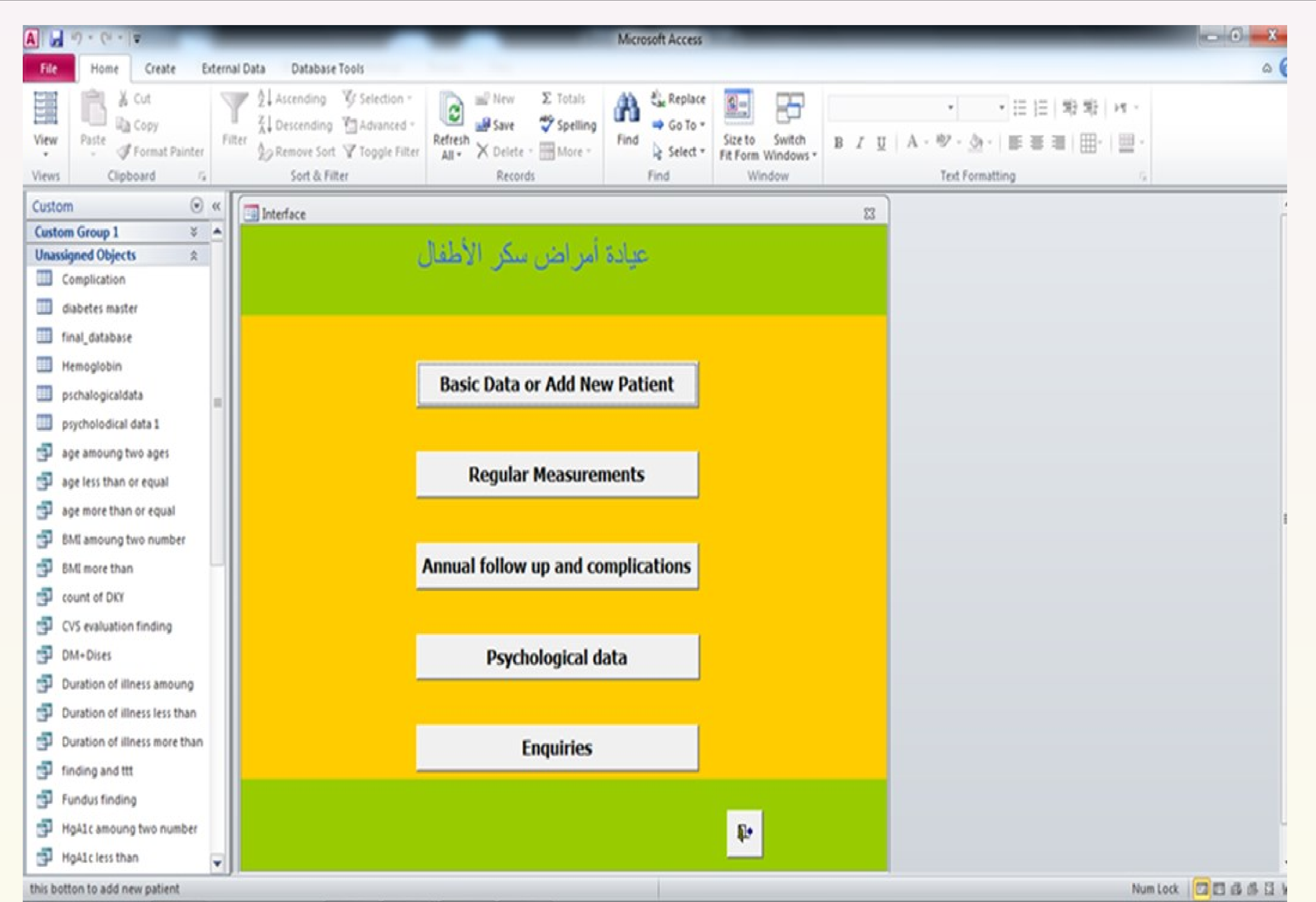
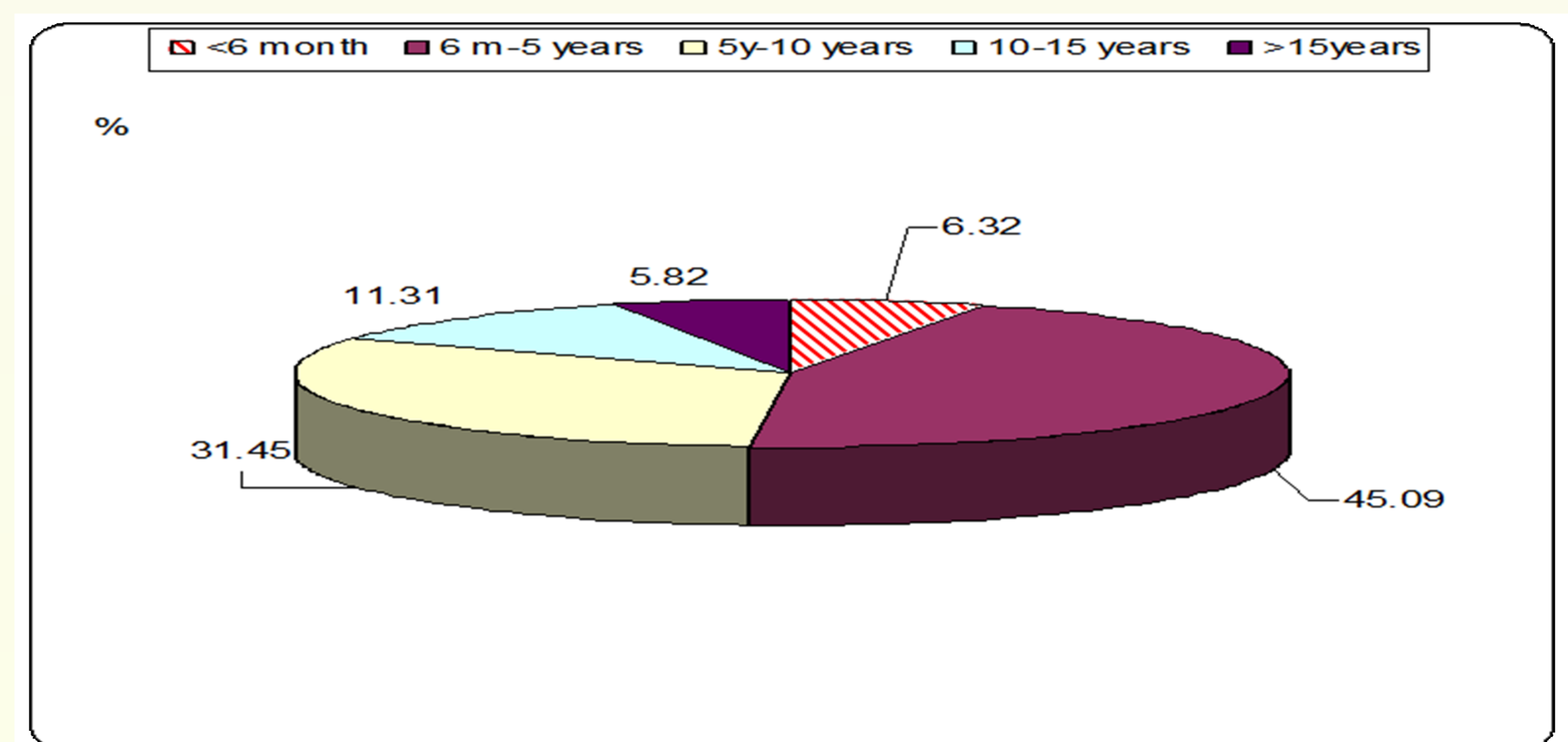**Fig(2):Diabetes data base model in the registration system.**

Fig. (3): Distribution of duration of DM among patients following up in our clinic.

CONCLUSION

❖ Data from registry indicate that although the majority of the patients were on intensive insulin therapy , poor glycemic control was common, and chronic complications were encountered.
❖ These findings will provide potential avenues to improve quality of care and also could be the first step in the development of a national registry system for diabetes in Egypt.