

The Interface of Child Mental Health and Juvenile Diabetes Mellitus



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KEYWORDS

- Diabetes mellitus • Children • Adolescents • Psychosocial functioning
- Cognitive functioning • Mental health

Diabetes mellitus (type 1) has long been identified as one of the most common chronic, lifelong illnesses developing in childhood. In the United States, type 2 diabetes and metabolic syndrome are increasing in children and adolescents at an alarming rate.^{1,2} Type 1 diabetes mellitus (T1DM) has also been called insulin-dependent diabetes mellitus (IDDM) and juvenile onset diabetes mellitus. The hallmark feature of T1DM is the under production or lack of production of insulin by the beta cells of the pancreas. This lack of insulin is felt to be due to the destruction of the beta cells. The hallmark feature of type 2 diabetes is “insulin resistance.” In type 2 diabetes, the pancreatic beta cells still make insulin, but cells become “resistant” to insulin and are unable to take up circulating glucose. Thus, high levels of circulating insulin and glucose are found in type 2 diabetes.³ Risk factors for type 2 diabetes include being overweight ([Table 1](#)). The incidence of overweight children and adolescents (above the 95th percentile for weight) has been increasing during the last few decades, with 17.1% of all children and adolescents being defined as overweight in 2003 and 2004.^{4,5} Risk factors for children and adolescents becoming overweight and who are at risk for metabolic syndrome or type 2 diabetes have

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Table 1 Differences among T1DM, type 2 diabetes mellitus, and metabolic syndrome		
Type 1 Diabetes Mellitus	Type 2 Diabetes Mellitus	Metabolic Syndrome
Onset: abrupt; often in childhood	Onset: gradual; originally adult disease, now increasing in childhood	Constellation of symptoms including:
Insulin dependent	Insulin resistant: hallmark feature	■ Abdominal adiposity
Defect: insulin producing cells of the pancreas	Associated with obesity, use of atypical antipsychotic medications	■ Elevated triglycerides
	May be controlled with diet and exercise	■ Low HDL
		■ Hypertension
		■ Type 2 diabetes may be associated
		Risk for cardiovascular disease
		May be associated with use of atypical antipsychotic medications

included the increased use of atypical antipsychotics, most notably olanzapine and clozapine.⁶⁻⁹

The incidence of T1DM varies with geography, age, gender, family history, and race. Risk for developing T1DM in childhood seems to increase with distance from the equator.¹⁰ In the United States, the highest incidence of T1DM is found in non-Hispanic white children, 23.6 per 100,000 annually.¹¹ Childhood-onset T1DM has a bimodal presentation for age of onset, with the first peak between ages 4 and 6 years and the second peak in early adolescence.¹²

Development of childhood-onset IDDM occurs with the destruction of the beta cells in the pancreas. The destruction is most often felt to be mediated by an autoimmune response but can also be seen in association with cystic fibrosis. In addition, there is noted genetic susceptibility as the risk for T1DM increases for first-degree relatives.¹³ Thus, for genetically susceptible individuals, it is postulated that environmental exposures (proposed agents including: viral infections, immunizations, diet, vitamin D deficiency and perinatal factors) trigger an immune response, leading to the destruction of the beta cells of the pancreas. There is also an associated increased risk for celiac disease for children with T1DM. Some children and families struggle with the dietary restrictions of T1DM and the gluten-free dietary requirements for celiac disease.

The treatment regimen for T1DM includes close monitoring of blood glucose level by “finger sticks,” monitoring of urine for glycosuria, diet modifications, and multiple injections of insulin per day. Some treatment centers advocate “tight” control, with blood glucose levels monitored as frequently as every 4 hours and decisions on insulin dose made as predicated by the blood glucose level. Other programs may have as “loose” a program as twice a day injections and twice a day monitoring of blood and urine glucose levels. But in the developing child with variable times of exercise, school lunches, birthday parties ensuring healthy blood glucose levels can be a challenge to the child, the family, and the care providers. Often in later adolescence, the individual with T1DM may opt (or be recommended by the treatment provider) to receive treatment from an insulin pump (subcutaneous continuous infusion of insulin). The insulin pump delivers continuous basal insulin with boluses associated with meals. Use of the insulin pump may reduce rates of hypoglycemic events, but controlled trials of pump therapy comparing injection therapy in the pediatric population are currently limited.^{14,15}

There are both long-term complications of chronically high blood glucose levels on the vascular system and serious short-term problems with acute hypoglycemic events

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