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## Case Report

## Specific Learning Disorder (SLD) and School Failure in a 12- Year- Old Girl Suffering from Type 1 Diabetes (T1DM): Interdisciplinary Therapeutic Approach

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## Abstract

**Introduction:** School performance, especially in children with SLD (SLD), is adversely affected by the coexistence of a chronic physical illness, such as Type 1 Diabetes (T1DM) (previously called juvenile diabetes or insulin-dependent diabetes). Being diagnosed with a chronic illness can be overwhelming; especially at the start it can be stressful for the child and its family. We are conscious that living with T1DM can be really challenging for children and adolescents in terms of complexity of treatment and the required level of family involvement for a successful management.

**Aim:** This article proposes a different approach to the phenomenon of learning difficulties and poor school performance in children who confront a major chronic physical condition, such as T1DM. We report the case of a 12-year-old girl who experienced SLD and school failure, while managing to adjust with T1DM. The purpose of this article is to highlight T1DM impact on psychological well-being and school performance in children and adolescents with SLD, presenting their experiences of their condition and treatment and those of their careers.

**Case Report:** A 12-year-old girl being diagnosed with SLD and T1DM came to our hospital for examination, feeling particularly vulnerable and anxious. The Child and Adolescent Psychiatric Assessment (CAPA), which usually takes place in our medical setting, in collaboration between Outpatient State Certified Diagnostic Department for Learning Difficulties and Child Psychiatry, highlighted a range of psychological symptoms that were common in PTSD and depression. A two-year follow-up revealed the challenge of patient adherence in managing T1DM but also highlighted the disease’s impact on the psychological well-being and school performing. The main need was to shape an integrated intervention program consisting of two major areas: (1) appropriate teaching methods and curricula designed to respond to the child’s particular needs (2) an environment that creates need for structural change. Integrating these two areas and building them into a simultaneously functioning integral system ensured that the needs of our patient with SLD were met.

**Conclusion:** Early interdisciplinary intervention is key for people with learning disorder and chronic disease. If problems are identified early, intervention can be more effective, and children can avoid going through extended problems with schoolwork and related low self-esteem. Overall, experience and research seem to indicate that the best preventive approach in T1DM patients who experience educational and psychological problems is a strong, supportive family who is able to follow health professionals’ instructions.

**Keywords:** Chronic disease; Early interdisciplinary intervention; School failure; Specific Learning Disorder (SLD); Type 1 Diabetes (T1DM)

## Introduction

Specific Learning Disorder (SLD) (often referred to as

learning disorder or learning disability) is a neurodevelopmental disorder that begins during school-age, although may not be recognized until adulthood [1,2]. Learning disabilities refers to ongoing problems in one of three areas, reading, writing and math, which are foundational to one’s ability to learn. Learning disorders, if not recognized and managed, can cause problems throughout a

person's life beyond having lower academic achievement [1-3]. These problems include increased risk of greater psychological distress, poorer overall mental health, unemployment/underemployment and dropping out of school [1,2,4]. SLD is a medical term used for diagnosis. It is often referred to as "learning disorder" [1,4-6]. "Learning disability" is a term used by both the educational and legal systems [4,6]. Though learning disability is not exactly synonymous with SLD, someone with a diagnosis of SLD can expect to meet criteria for a learning disability and have the legal status of a federally recognized disability to qualify for accommodations and services in school. The term "learning difference" is a term that has gained popularity, especially when speaking with children about their difficulties, as it does not label them as "disordered" [5,6].

T1DM is a life-long disease. We are conscious that living with T1DM can be really demanding compared to other chronic conditions. T1DM in children, also known as juvenile diabetes or insulin-dependent diabetes, can appear at any age and it accounts for about 5% of all patients with diabetes. T1DM in childhood has been found to be associated with an increased risk of psychiatric comorbidities [7-9], which might intensify the burden of disease and accelerate metabolic deterioration [10,11], subsequently increasing the risk of mortality and long-term complications such as retinopathy, nephropathy, and neuropathy [12,13].

Diagnosis in children can be overwhelming, especially in the beginning. Symptoms can occur a bit differently in each child. They can include many symptoms such as high levels of glucose in the blood and urine when tested, unusual thirst, dehydration, frequent urination (a baby may need more diaper changes, or a toilet-trained child may start wetting his or her pants), extreme hunger but weight loss or loss of appetite in younger children, blurred vision, nausea and vomiting, abdominal pain, weakness and fatigue, irritability and mood changes, serious diaper rash that improves with treatment, fruity breath and tachypnea, yeast infection in girls.

T1DM is unique among chronic diseases of children and adolescents in terms of complexity of treatment and the required level of family involvement for a successful management [14]. Constant management and ongoing targets and tests can be overwhelming and stressful for the patient. Suddenly parents and child — depending of the child's age — must learn how to give injections, count carbohydrates and monitor blood sugar. There's no cure for T1DM in children, but it can be managed. Advances in blood sugar monitoring and insulin delivery have improved blood sugar management and quality of life for the patients. Children with T1DM must have daily injections of insulin in order to maintain the blood glucose level within normal ranges.

Living with diabetes is a heavy burden for children, adolescents and their relatives. Some appear to suffer more, while

others demonstrate incredible resilience [15]. Although the majority of children and adolescents cope reasonably well with diabetes's challenges, a small proportion experiences serious psychological issues, such as depression and eating disorders [15,16]. Psychiatric comorbidity in children and adolescents with T1DM increases the risk of poor metabolic outcomes [7,8]. Adolescents with depression may find it very difficult to do even the minimum required to maintain safe metabolic control. As a result, they are at serious risk for short- and long-term complications [15-17]. High HbA1c levels in the early period after T1DM onset seem to be a possible indicator for subsequent psychiatric disorders, and having a psychiatric disorder was associated with higher HbA1c levels, especially in patients with disorders of putative reactive pathogenesis [7]. Given that the estimated risk of being diagnosed with a psychiatric disorder within a period of 15–20 years of T1DM onset in some studies was high (up to 30%) [1], this finding highlighted an important clinical problem [7,8].

Psychological well-being is affected by good metabolic control, which depends of a healthy psychological environment [15]. When depression is suspected or identified in an adolescent diagnosed with T1DM, a responsible adult needs to secure safe diabetes's management and require help from a mental health professional [15].

There is substantive evidence of research, suggesting that although children with T1DM perform in the average range as a group on tests of general intelligence, they may show mild cognitive and academic difficulties, particularly in reading [18]. Although subtle neuropsychological deficits have been found in some children with T1DM, these data have been inconsistent, and it is not yet clear what the impact of these deficits might be on the learning of children with diabetes over time [18]. Unfortunately, previous studies of learning deficits in children with diabetes have often used small, selective clinical samples, cross-sectional designs, and incompletely matched control groups, which have contributed to the markedly inconsistent results [18]. A number of studies have reported differences between groups of children with diabetes and other groups on specific neuropsychological tests [18]. Difficulties have been reported with verbal intelligence [18,19], slow work rate [19], memory skills [18,20,21], timed motor tasks [18-22], visuospatial abilities [18,23,24], abstract/visual reasoning [18-25], speed of processing [18-23], and attention [18,20,26]. However, these results have been contradictory; some studies have identified verbal and memory difficulties, whereas others have failed to find verbal difficulties and have instead identified visuospatial deficits. Neuropsychological deficits have been associated with a number of risk factors, most commonly onset of T1DM before the age of 7 [18,20-22,27,28] and psychosocial factors such as increased school absences [18,24,29]. The subtle neurocognitive impairments that have been documented in some children with diabetes at some ages may not necessarily produce

measurable decrements in academic performance, even over time [18], in agreement with studies that concluded that major long-term cognitive deficits in children with T1DM, with only a few exceptions, such as in association with hypoglycemic seizures, cannot be attributed to the effects of diabetes [18,30].

Despite these findings there is still a huge need, however, to monitor carefully children who are receiving intensive treatment to prevent seizures and to ensure that increased episodes of hypoglycemia (especially if associated with seizures or coma) are not adversely affecting learning [18].

## Aim

This article proposes a multidiscipline approach to the phenomenon of SLD and poor school performance in children who confront a major chronic physical condition, such as T1DM. We report the case of a 12-year-old girl who experienced SLD and school failure, while managing to adjust with T1DM. The purpose of this article is to highlight T1DM impact on psychological well-being and school performance in children and adolescents with SLD.

## Case Report

A 12-year-old girl being diagnosed with SLD from the age of 8-year-old, and first diagnosed T1DM came to our hospital for examination. The child was feeling particularly vulnerable and anxious. The Child and Adolescent Psychiatric Assessment (CAPA), which usually takes place in our medical setting, in collaboration Outpatient State Certified Diagnostic Department for Learning Difficulties and Child Psychiatry, highlighted a range of psychological symptoms that were common in PTSD and depression. A two-year follow-up revealed the challenge of managing T1DM but also highlighted the psychological impact of the disease on school performance, while struggling with SLD.

During diagnosis and follow-up, emerged a number of symptoms that needed to be taken seriously under consideration and evaluated in detail:

a) Posttraumatic stress disorder. Diabetes diagnosis is considered as an unpredictable, unmanageable and harmful traumatic experience. There is a normal psychological process that follows a traumatic experience and is known as Post-Traumatic Stress Disorder (PTSD). The patient experiences several symptoms, such as disturbed sleep, hyper vigilance, overwhelming fear, insecurity, tearfulness, panic attacks, helplessness, hopelessness, feeling detached from family and friends.

b) Expressing suicidal thoughts and plans. It is usual for children and teenagers recently diagnosed with diabetes to feel despair at times. It is important to remember that children and teenagers with diabetes are particularly at risk of impulsive acts of self-harm, as they have access to insulin. Suicidal thoughts and any

evidence of self-harm should be seriously considered. In our case, the expression of suicidal thoughts mostly meant that the patient wanted to change her life course (for example, not suffering from diabetes) rather than ending it. Suicidal thoughts and any evidence of cutting (usually on arms and upper legs) and other injuries (such as burns), were signs of significant distress.

c) Deficits in academic performance. As our patient had to deal with a complicated routine of daily insulin injections along with monitoring blood glucose levels, dietary intake, and exercise, all of this must be conducted while the child still lived a “normal” life. Chronic, extreme fluctuations in blood sugar levels and the psychosocial effects of a chronic disease have been associated with deficits in academic performance [12]. For children with SLD and diabetes, life will not be “normal” if their learning and school performance are compromised by cognitive deficits resulting from their disease.

d) Diabetes 1 diagnosis represents a crisis for children and parents [15]. Family members often experience the classic stages of grief as they begin to grapple with the life-long nature of diabetes and its potential consequences [15,31]. In the first few months, it is common for children and adolescents to feel sad, lonely, anxious and irritable. Outbursts of temper, pessimism about the future, and refusal to take insulin or attend school are less common responses and more cause for concern [15,32]. Patient’s parents, especially her mother, also reported feelings of despair and anxiety, which were precipitated by guilt or worry about the child’s future. These negative reactions in youngsters and their parents seem to be normative responses, and they tend to subside during the first year [15,32]. However, when adjustment difficulties persist, there is a greater risk for future psychosocial adjustment and metabolic control problems [15,32,33].

Adherence difficulties with diabetes management peak in adolescence [7,15]. Metabolic control deteriorates in adolescents when compared with children and adults [15,34]. This could be explained by the physiological changes and insulin resistance that occur with puberty as well as ‘physiological resistance’ and adherence problems that seem to peak in adolescence. Psychological factors that account for poor adherence are best understood within the context of normal adolescent development. Experimentation, rebellion and risk-taking are often associated with the adolescent’s struggle for control of his or her destiny. This is a challenging time for adolescents, parents and health professionals [15,18].

## Discussion

Early intervention is key for people with learning disorder and chronic disease. If problems are identified early, intervention can be more effective, and children can avoid going through extended problems with schoolwork and related low self-esteem [3,5,6]. Though there is no “cure,” SLD can be successfully managed

throughout her life, so that she may become skilled learner and may be able to build on strengths that often are associated with hers learning differences [5,6].

In our case report, the main need was to shape an integrated intervention program consisting of two major areas: (1) appropriate teaching methods and curricula designed to respond to the child's particular needs (2) an environment that creates need for structural change. Integrating these two areas and building them into a simultaneously functioning integral system ensured that the needs of our patient with SLD were met.

Education for a person with learning disabilities often involves multimodal teaching – involving multiple senses [5,6]. Special education services can help children with learning disabilities improve reading, writing and math [5,6,35]. Effective interventions involve systematic, intensive, individualized instruction that may improve the learning difficulties and/or help the individual use strategies to compensate for their disorder [5,35]. Research has shown that the most effective treatments for reading disorder are structured, targeted strategies that address phonological awareness, decoding skills, comprehension and fluency [5,6,35]. Treatments for writing problems are in two general areas: the process of writing and the process of composing written expression [6,35]. Students with learning disorders also benefit from accommodations, such as additional time on tests and written assignments, using computers for typing rather than writing by hand and smaller class size [5,6,35]. Successful interventions, strategies and accommodations for a child may change over time as the child develops and academic expectations change [5,6,35].

Diabetes 1 diagnosis was stressful for the child and its family. In the beginning, she could not understand all the life changes, such as glucose monitoring and insulin injections. She felt as if she was being punished and guilty. She feared death and expressed anger toward her parents. Out of fear and frustration, parents felt obliged to motivate the adolescent with scare tactics, including the threat of complications. This rarely -if ever- worked and may have been counterproductive.

Rather, the health professionals helped the adolescent and parents label their respective concerns, promote a collaborative relationship between them and actively encourage shared decision-making. Mutual respect needed to be emphasized. Addressing the adolescent's number one concern -first- was a good starting point. A good question for health professionals to ask all young people from time to time was, "What is the toughest part about living with diabetes right now?". This represented a teachable moment and also the start of some focused problem-solving [36].

Children and adolescents with diabetes and their families require the support of an expert pediatric diabetes team from the time of diagnosis [9]. In our hospital this team was composed of

a physician, nurse, dietitian and child and adolescent psychiatrist. The treatment approach incorporated an understanding of the social and psychological implications of T1DM in youth [36].

### **What Health Professionals Did to Facilitate Early Adjustment to Diabetes? [15]**

Firstly, health professionals ensured that the family had the opportunity to learn about and be prepared for the psychological impact of diabetes's diagnosis. They also recommended early referral to the child-adolescent psychiatrist for assessment and support [15].

Secondly, health professionals ensured not to overwhelm the family. In the first few days, they provided only key 'survival' information and allowed taking time to grieve [15].

In-depth education and behavioral interventions were mostly provided the period following diagnosis, to prevent the development of negative habits [15,36].

As part of the adjustment process, the family was required to create a 'new normal'. This included developing new priorities, reorganizing family responsibilities, renegotiating child/adolescent and parent relationships in the area of support and supervision, and formalizing structures to support the integration of new routines [15].

The ultimate goal was successful diabetes management without permitting the illness to interfere with the attainment of normal developmental tasks. This was not easy.

Mental health professionals helped by providing family with opportunities for formalized social support through groups or parent-to-parent guidance. In addition, team members took time at each encounter to discuss with parents and adolescent about their challenges in living with diabetes. At each visit, expectations and management goals were reviewed to ensure that they were realistic and congruent with the patient's age and stage of development. It was critical that success was measured not only by glycemic outcomes but also by the attainment of age-appropriate diabetes-related skills and responsibilities, as well as emotional, social and academic development [16,37,38].

Parents helped their child by treating it as a normal child, with diabetes management as just one aspect of their daily life, even when the mission was daunting and further complicated by the normal developmental challenges of childhood and adolescence.

### **Conclusion**

Early interdisciplinary intervention is key for people with learning disorder and chronic disease. If problems are identified early, intervention can be more effective, and children can avoid going through extended problems with schoolwork and related

low self-esteem. Experience and research seem to indicate that the best preventive approach in T1DM patients, who experience educational and psychological problems, is a strong, supportive family who is able to gain strength and follow instructions from a health medical team [15].

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