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Therapeutic Education Programs for School-Age Children

According to the most recent data from the International Diabetes Federation (IDF) Diabetes Atlas 2025, nearly two million young people under the age of 20 live with type 1 diabetes (T1D) worldwide, with 200,000 new diagnoses each year. In Europe, incidence is constantly increasing, with an annual rise of 3–4%. In Spain, the estimated average is 20.54 new cases per 100,000 inhabitants younger than 15 years, which translates into about 1,398 annual diagnoses (1).

To provide real data, in 2023—led by Dr. Luis Castaño—the **"National Registry of People with T1DM"** was created in Spain, promoted by the three main scientific societies dedicated to diabetes: the Spanish Society of Endocrinology and Nutrition (SEEN), the Spanish Diabetes Society (SED), and the Spanish Society of Pediatric Endocrinology (SEEP) (2). This initiative will allow a better understanding of the current situation of the disease, improve its management, and advance research.

The management of T1DM in childhood requires comprehensive strategies focused not only on the optimal medical therapy but also on educational and psychosocial support for the child, their family, and their school environment. In this context, **Therapeutic Education Programs** (TEPs) emerge as an essential tool to empower children and enable their self-management from the earliest stages of life.

THERAPEUTIC EDUCATION IN DIABETES (TED): A FUNDAMENTAL PILLAR

The WHO defines therapeutic education in diabetes as a continuous, person-centered, structured, **and multidisciplinary process led by nurses with specialized training in communication, motivation, and clinical diabetes competencies**. This process provides people with diabetes (and their caregivers) with the knowledge, skills, and attitudes needed for safe self-management of the disease. Furthermore, both ISPAD and ADA agree that therapeutic education is not a complement but **an integral part of diabetes treatment**.

TED is a **form of care** that adapts to the needs, values, and experiences of the person throughout life. It is evidence-based and is implemented through TEPs.

Advanced Practice Nurses (APNs) play an important role, including the design and execution of educational programs, as already explained by Pilar Peláez in issue nº 90 of the journal Diabetes in 2024 *https://www.revistadiabetes.org/wp-content/uploads/Enfermeria-de-Practica-Avanzada-en-Diabetes-situacion-en-nuestro-entorno.pdf*.

APNs guarantee greater treatment adherence, reduced hospitalizations, and smoother transition from pediatric to adult care through continuous, patient-centered care. They are also strongly advocated by diabetes associations themselves to lead TEPs due to their high level of competence.

In pediatric diabetes care, the APN acts as a key reference point for both child and family, providing individualized education, proactive follow-up, and coordination with other healthcare and educational professionals.

The diagnosis of a chronic disease such as diabetes in children involves lifestyle changes for both the child and the family. This stage has unique characteristics, including greater metabolic variability due to hormonal changes, intercurrent illnesses, and psychological and cognitive changes typical of childhood.

The most frequent challenges that must be considered include (3):

- **Psychological:** both the child and family may go through different emotional stages, which may not coincide. The constant demands of diabetes management add emotional strain. Both hyperglycemia and hypoglycemia affect the central nervous system, emotions, and behavior.
- **Family:** managing diabetes often implies changes in diet, routines, and activities, which may lead to conflicts within family relationships.
- **School-related:** it is necessary to train and inform school staff to ensure real integration of the child. Establishing clear, regulated coordination with schools through agreed protocols is essential.
- **Social:** lack of public knowledge continues to generate stigma, pity, rejection, or fear.
- **Economic:** diabetes entails varying degrees of economic burden.

HOW TO DESIGN A TEP FOR SCHOOL-AGE CHILDREN?

Pediatric TEPs must be carefully designed, with specific objectives, age-appropriate content, and active methodologies that promote meaningful learning. These programs must adapt not only to the stage of the disease but also to the child's family, cultural, and school context, while incorporating te- »

THE MANAGEMENT OF T1DM IN CHILDHOOD REQUIRES COMPREHENSIVE STRATEGIES FOCUSED NOT ONLY ON MEDICAL TREATMENT BUT ALSO ON EDUCATIONAL AND PSYCHOSOCIAL SUPPORT FOR THE CHILD, THEIR FAMILY, AND THEIR SCHOOL ENVIRONMENT

PEDIATRIC TEPS MUST BE CAREFULLY DESIGNED, WITH SPECIFIC OBJECTIVES, CONTENT ADAPTED TO THE AGE AND CHARACTERISTICS OF THE CHILD, AND ACTIVE METHODOLOGIES THAT PROMOTE MEANINGFUL LEARNING

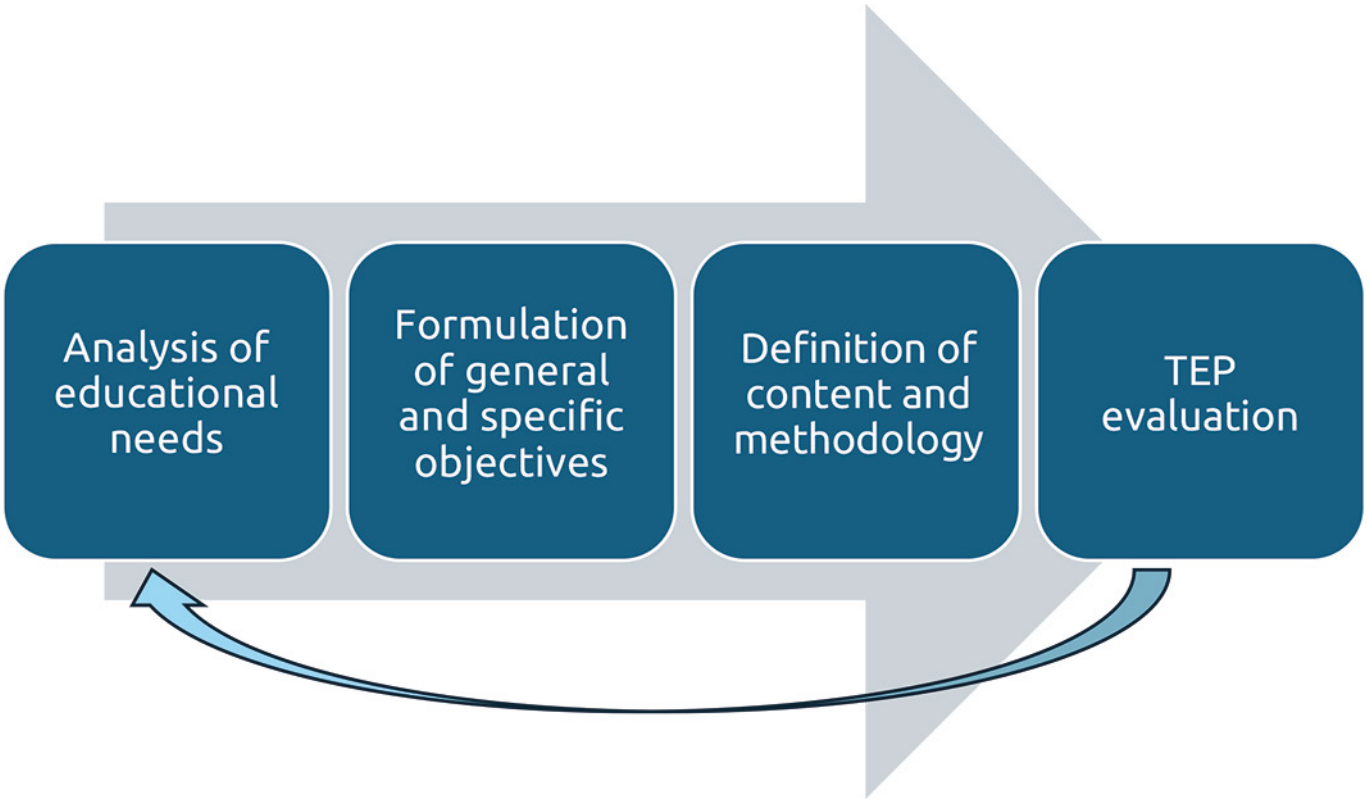

FIGURE 1

» chnological advances in diabetes management (insulin pumps, glucose sensors, mobile applications).

According to the Structured Therapeutic Education Programs Guide of the SED (4), the following steps should be followed *(Figure 1)*:

1. **Assess the needs** of the child and family: the educator's first interview with the child and family is key to building trust, providing support, and offering reassurance. This stage assesses:

- **Emotional state** (guilt, disease knowledge, beliefs, expectations, fears, etc.).
- **Learning capacity** (age, school level, maturity, sociocultural context).
- **Activities** (sports, hobbies, eating habits, food preparation).
- **Family situation** (caregivers involved, extended family support).

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- **Social context** (origin, language, traditions).

2. **Set objectives** to improve self-management through knowledge, skills, and attitudes of the whole family unit.

    - General objectives: maintain glucose levels in optimal ranges, avoid hypoglycemia (especially in early ages), ensure proper physical and psychological development, maximize family/social integration, and encourage active participation of the child.

    - Specific objectives: realistic, feasible, and agreed upon with the family. Cognitive abilities and learning capacity must be adapted to developmental stage, as described by Piaget and Inhelder.

3. **Implement the educational intervention** with defined content, methodology, and educational techniques. Effective methods include interactive workshops, role-playing, educational games, animated videos, and practical simulations. Digital tools such as mobile apps, web platforms, and social media have also proven effective in self-management and empowerment of children and adolescents with diabetes.

4. **Accompany the child and family** using validated questionnaires focused on patient-reported outcomes (PROMs) and patient-reported experience measures (PREMs), child/parent interviews, direct observation of techniques, and clinical indicators. Program discharge follows evaluation of results.

These programs guarantee effectiveness, continuous improvement, and adaptability to the real needs of children, adolescents, and their families. D

CONCLUSIONS AND PROPOSALS FOR IMPROVEMENT

T1DM in childhood represents a health care, educational, and social challenge. TEPs for school-age children are an essential tool to ensure comprehensive care centered on the child and their environment.

To improve effectiveness, it is proposed to:

1. Promote creation, implementation, and equitable access to TEPs across all health care centers.
2. Incorporate APNs as reference professionals in therapeutic education.
3. Guarantee training of school staff and the design of clear, updated school protocols.

"Therapeutic education programs in T1DM for school-age children are an indispensable tool for comprehensive disease management. They not only teach the child to live with their condition but also empower their family and school environment to provide adequate and safe support."

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