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Psychosocial Repercussions of Type 1 Diabetes Mellitus in Children and Adolescents

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ABSTRACT

OBJECTIVE

To analyze the effects of type 1 diabetes (T1D) on the psychological, social, and family development of children and adolescents living with the disease.

METHODS

It was conducted an integrative literature review with a descriptive and quantitative approach. Searches were performed in the LILACS, MEDLINE, PubMed, and SciELO databases for studies published in English, Spanish, and Portuguese between 2013 and 2023. The descriptors used were "Diabetes Mellitus, Type 1," "Type 1 Diabetes," "Child," "Adolescent," and "Psychosocial Impact." Articles were evaluated according to the Oxford Centre for Evidence-Based Medicine levels of evidence.

RESULTS

A total of 24 studies met the inclusion and exclusion criteria. Most research was qualitative or exploratory, with a 2C level of evidence. Children and adolescents with T1D exhibited poorer glycemic control when accompanied by emotional disorders, depression, or negative disease perceptions were present, which intensified during adolescence. Issues such as weight gain, binge eating, and low self-esteem further impacted disease management. Social and economic factors also influenced outcomes: bullying, family conflict, and low income were associated with lower treatment adherence and greater complications.

CONCLUSIONS

Family and school support networks and multidisciplinary care promote adherence, autonomy, and quality of life. Coping strategies, including self-care, resilience, and the use of monitoring technologies, can improve glycemic control.

KEYWORDS

Diabetes Mellitus, Type 1; Type 1 Diabetes; Child; Adolescent; Psychosocial Impact

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INTRODUCTION

Type 1 Diabetes Mellitus (T1D) is an autoimmune disease characterised by reduced insulin production by the beta cells of the pancreas. It can manifest at any age, with a predominance between 5 and 15 years of age.[1,2] It is the most common endocrine disorder in children and adolescents and can compromise the growth, development, and psychosocial adjustment of affected individuals.[3]

Insulin helps transport glucose into cells, a substance that is transformed into energy essential for their activities. Replacement of this hormone is necessary for adequate disease control and a healthy life.[4]

T1D is diagnosed based on clinical manifestations and, being a chronic disease, requires lifelong treatment, including strict medical supervision, insulin administration, physical exercise, glycemic monitoring, and a balanced diet.[1,5]

Furthermore, difficulty maintaining adequate blood glucose levels increases the risk of long-term conditions such as diabetic ketoacidosis (DKA), characterised by high blood glucose and ketone levels. DKA, one of the most serious and common complications, is present in approximately 25% of T1D cases at the time of diagnosis and is the leading cause of death in these individuals. Symptoms include dehydration, tachycardia, tachypnea, nausea, vomiting, abdominal pain, and a characteristic fruity breath odour.[3,6,7]

In addition to its clinical repercussions, DM1 directly impacts the psychological development of children and adolescents, transforming their outlook on life and their level of personal satisfaction. Coping with the condition during a period marked by intense physical and emotional transformations can compromise self-esteem, autonomy, and the perception of well-being.[6]

Additionally, studies show that DM1 also poses social and family challenges, as it is associated with poor integration of patients into school and leisure environments. After diagnosis, managing the new care routine can become a major challenge for patients and their families, as it creates emotional overload for caregivers, potentially leading to conflict, insecurity, and fear of acute complications, such as hypoglycemia.[6,8]

Further aspects make patients with DM1 more likely to report high levels of stress and psychological disorders such as anxiety and depression compared to children without the disease. Thus, understanding the psychosocial impacts of DM1 becomes essential to the development of comprehensive care strategies that consider not only clinical aspects but also the emotional and relational determinants involved in living with diabetes.[3,5]

Therefore, this review aims to analyze the effects of DM1 on the psychological, social, and family development of children and adolescents with the disease; to determine whether social and emotional aspects influence glycemic control; and to identify strategies that can be used by healthcare professionals, families, and patients themselves to assist healthcare professionals in their clinical practice.

METHODS

This is an integrative literature review (IR), defined as a tool for obtaining, identifying, analysing, and synthesising bibliography focused on a specific topic, enabling a broad discussion on the methods and results of publications.

The integrative review comprises five steps: 1) development of the guiding question; 2) sample selection after defining the inclusion criteria; 3) study characterisation; 4) critical analysis of the results; 5) presentation and discussion of the findings.

Using this tool, we reviewed the scientific literature published on the psychosocial impacts of children and adolescents coping with T1D between 2013 and 2023. The search was conducted in the Latin American and Caribbean Literature in Health Sciences (LILACS), Medical Literature Analysis and Retrieval (MEDLINE), PubMed, and the Scientific Electronic Library Online (SciELO). The descriptors combined with Boolean operators were used: "Diabetes Mellitus, Type 1" OR "Type 1 Diabetes" AND "Child" OR "Adolescent" AND "Psychosocial Impact." Data collection took place in July 2023.

The inclusion criteria adopted were: 1) observational, descriptive, or analytical studies; 2) published in Portuguese, English, or Spanish; 3) free full-text articles in national and international journals; 4) indexed in the aforementioned databases. The following were excluded: 1) duplicate articles across databases; 2) studies of the review type, editorial, comment, letter, study protocol, or conference abstract; 3) studies using in vitro or animal models, or studies that did not address the research objective or sample (children and/or adolescents).

Data from each study were collected and analysed by three reviewers. To systematise the data obtained, a collection instrument was developed containing variables related to the article identification (author, journal, year of publication, search location) and research identification (type of study, level of evidence, remarks/subject matter).

The studies were evaluated considering the Oxford Centre Evidence-Based Medicine classification system to delimit the level of evidence (LE) of the studies included in the sample, as shown in Table 1.

Table 1 - Levels of evidence by type of study

LE	TYPES OF STUDY
1A	Systematic reviews and meta-analyses of comparable clinical trials. Well-designed randomized controlled trials with relevant clinical outcomes.
1B	Systematic reviews of randomized controlled trials with narrow confidence intervals.
1C	All-or-nothing results. Systematic reviews/case-controlled series studies.
2A	Homogeneous systematic review of cohort studies (with comparison groups and control variables)
2B	Cohort study with poor quality of randomization, control or without long follow-up, cross-sectional cohort study.
2C	Research results (observation of therapeutic results or clinical evolution).
3A	Homogeneous systematic review of case studies with control groups.
3B	Case studies with a control group.
4	Case reports and series without case-control definition.
5	Opinion of respected authorities or experts. Non-systematic literature review.
LE = Level of Evidence. Source: Adapted from Oxford Centre Evidence-Based Medicine, 2023	

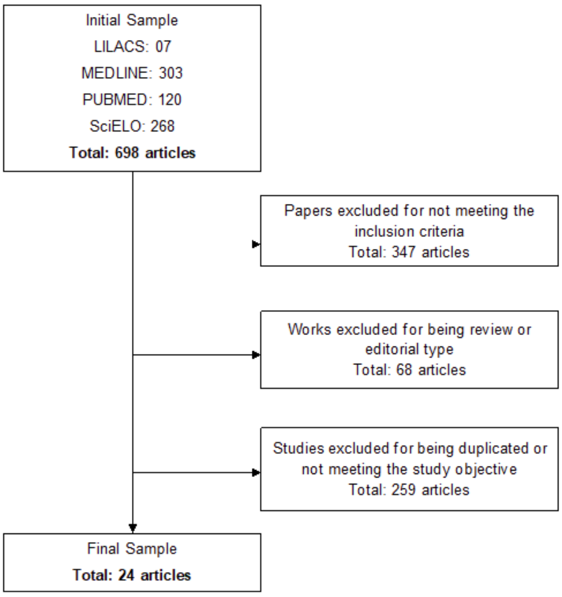
Source: Authors (2025)

The results were presented descriptively using a comparative table. The absolute and relative frequencies were used to characterise the studies to enable better analysis of the findings and presentation of the evidence from the integrative review.

RESULTS

The initial search identified 698 articles and, based on the initially proposed inclusion and exclusion criteria, 24 studies were selected for analysis, of which 13 (54.17%) were indexed in MEDLINE, 10 (41.67%) in SciELO, and 1 (4.16%) in PubMed.

Figure 1- Article selection flowchart



Source: Author's (2023)

Table 2 presents the characteristics of the studies by author, year of publication, journal, and search location. Table 3 then characterizes the articles by study type, level of evidence, and topic of the selected study.

Table 2: Characterization of studies according to authors, year of publication, journal and search location

CODE	AUTHORS	YEAR	PERIODICAL	SEARCH ENGINE
A1	Cserép M et al.[6]	2022	International Journal of Environmental Research and Public Health	**MEDLINE**
A2	Glocker V et al.[8]	2022	Frontiers in Endocrinology (Lausanne)	**MEDLINE**
A3	Mahler FL et al.[1]	2022	Journal of Diabetes Research	**MEDLINE**
A4	Matos-Melo AL et al.[5]	2018	Puerto Rico Health Sciences Journal	**MEDLINE**
A5	Guerrero-Ramírez G et al.[9]	2018	Puerto Rico Health Sciences Journal	**MEDLINE**
A6	Baran RT et al.[7]	2018	Turkish Journal of Pediatrics	**MEDLINE**
A7	Hagger V et al.[4]	2016	BMC Psychology	**MEDLINE**
A8	Gonçalves S et al.[10]	2016	Canadian Journal of Diabetes	**MEDLINE**
A9	Chae M et al.[11]	2016	Acta Diabetologica Latina	**MEDLINE**

A10	Wisting L et al.[12]	2015	PLoS One	**MEDLINE**
A11	Eilander MMA et al.[13]	2015	BioMed Central Pediatrics	**MEDLINE**
A12	Adal E et al.[14]	2015	Journal of Clinical Research in Pediatric Endocrinology	**MEDLINE**
A13	Wu YP et al.[15]	2013	Diabetic Medicine	**MEDLINE**
A14	Barnard KD et al.[16]	2017	Journal of Diabetes Science and Technology	**PUBMED**
A15	Amaral-Bastos MM et al.[17]	2022	Revista Portuguesa de Enfermagem de Saúde Mental	**SCIELO**
A16	Aguiar GB et al.[18]	2021	Revista da Escola de Enfermagem da USP	**SCIELO**
A17	Zanatta EA et al.[19]	2020	Revista de Enfermagem Referência	**SCIELO**
A18	Souza MA et al.[20]	2019	Revista Latino-Americana de Enfermagem	**SCIELO**
A19	Martins KAKF et al.[21]	2018	Revista da Associação Médica Brasileira	**SCIELO**
A20	Cruz DSMD et al.[22]	2018	Acta Paulista de Enfermagem	**SCIELO**
A21	Collet N et al.[23]	2018	Revista da Escola de Enfermagem da USP	**SCIELO**
A22	Greco-Soares JP et al.[24]	2017	Sociedade Portuguesa de Psicologia da Saúde	**SCIELO**
A23	Queiroz MVO et al.[25]	2016	Escola Anna Nery Revista de Enfermagem	**SCIELO**
A24	Ortiz MS et al.[26]	2014	Revista Médica de Chile	**SCIELO**

Source: Author's (2023)

Table 3: Characterization of studies according to type of study, level of evidence and considerations or study theme

CODE	TYPE OF STUDY	LE	CONSIDERATIONS / THEME
A1	Cross-sectional study	3B	Assesses the predictive role of cognitive emotional regulation in the quality of life of adolescents with chronic diseases
A2	Cross-sectional study	3B	Relates the fear of hypoglycemia to the psychosocial burden of parents and children/adolescents with DM1
A3	Cross-sectional study	3B	Focuses on family stress as a risk factor for low adherence to treatment and worse metabolic control
A4	Qualitative research	2C	Relates family conflict to depression and difficulty in adhering to treatment
A5	Qualitative research	2C	Explores factors associated with suicidal ideation and diabetes-related quality of life

A6	Observational study	3B	Assesses the psychological characteristics of children with DM1 from two distinct regions of Türkiye
A7	Qualitative research	2C	Investigates psychological and behavioral issues in Australian adolescents with DM1
A8	Cross-sectional study	3B	Dysfunctional eating behaviors, self-esteem, and social anxiety related to physical appearance
A9	Observational study	3B	Explores the negative impact of environmental clutter/CHAOS on diabetes control in pediatric patients
A10	Controlled clinical trial	3B	Investigates associations between eating disorder psychopathology and the perception of DM1 in adolescents
A11	Longitudinal cut	2B	Investigates how DM1 affects biological, psychosocial, cognitive and family development
A12	Observational study	3B	Aims to identify the state of depression and anxiety in diabetic adolescents and its impact on management
A13	Qualitative research	2C	Assesses the impact of depressive symptoms on family involvement in diabetes control
A14	Randomized Cohort	2B	Addresses the positive and negative aspects of living with insulin pump therapy for T1D, the expectations, hopes and anxieties
A15	Cross-sectional study	3B	Relationships between protective and vulnerability factors
A16	Case report	4	Main challenges experienced by children with DM1 and their coping strategies
A17	Exploratory research	2C	Impacts of DM on adolescents' routine
A18	Qualitative research	2C	Relationship between health-related quality of life and socioeconomic status of DM1 patients
A19	Cohort study	2B	Assesses and identifies factors that influence health-related quality of life
A20	Exploratory research	2C	Relationship between children and parents when dealing with DM1, from diagnosis to adolescence
A21	Qualitative research	2C	Needs of pre-adolescents with DM1 regarding self-care support for disease management
A22	Cross-sectional study	3B	Relationship between treatment adherence and self-care
A23	Qualitative research	2C	Applicability of the “Cuerpo Saber/ Body Knowledge” dynamic in raising children’s awareness of self-care
A24	Case study	4	Relationship between psychological stress and metabolic control

Source: Author's (2023)

DISCUSSION

1) Relation between Emotional Aspects and Glycemic Control

The selected studies confirmed that children and adolescents with psychosocial disorders had poorer metabolic control. The longer the time since the diagnosis was made, the greater the chances of developing psychological disorders and poorer disease control, increasing the risk of future complications.[7,13]

This is because there are significant differences in how individuals with and without T1D manage their emotions. The disease is seen as a limiting factor, requiring strict medical and dietary control, leading to higher levels of stress compared to healthy individuals.[19]

The perception of reality among young people with T1D was associated with significant psychological impacts, with feelings of fear, sadness, and anger being common.

These factors tend to intensify during adolescence, a time when individuals more clearly recognize the limitations imposed by the disease, subsequently rarely noticed.[6,19]

The weight gain related to T1D, more common among girls, can lead to eating disorders such as binge eating, weight concerns, and a distorted view of their bodies.[4,10,12] Depression has been associated with poorer disease control, as depressive symptoms impair energy, motivation, concentration, and problem-solving skills, all of which are essential attributes for glycemic management.[15]

2) Influence of the social and economic environment on the experience of the disease

Children and adolescents with T1D experience more Children and adolescents with T1D experience more physical, more physical, verbal, psychological, social, and sexual bullying. Having the disease limits socialization, resulting in less social support and difficulties managing diabetes in public places, such as school. Therefore, bullying is associated with poorer glycemic control and, in more severe cases, with low self-esteem, negative self-perception, and suicidal ideation.[27]

Family conflict was mentioned several times, often related to the fear of hypoglycemia and the greater dedication required of caregivers. This scenario generates stress and traumatic experiences that compromise coping with the disease, resulting in poorer treatment adherence. On the other hand, adherence improves when the family and school provides security, a support network, identification with peers, access to quality information, and multidisciplinary monitoring. Shared care between parents and children is associated with better performance.[15,22,24] It is worth noting that socioeconomic factors also influence the management of DM1, since low-income families were associated with a higher incidence of complications, such as hospitalizations, glycated hemoglobin and triglyceride levels.20 Thus, the environment in which the child or adolescent is inserted, combined with access to health resources and family and schol support are essential to promote a better quality of life.

3) Coping Strategies

Emotional control, practicing resilience, and an organized self-care routine have proven to be fundamental for managing T1D, which requires maturity and responsibility from the patient.[19]

Teaching responsible practices by parents and healthcare teams, such as self-monitoring of blood glucose, fosters knowledge, autonomy, and better acceptance of the disease, as evidenced by educational programs such as "Cuerpo Saber." Additionally, insulin delivery and blood glucose monitoring devices can make treatment safer, reducing the risk of hypoglycemia.[25,16]

Once again, a welcoming environment with a strong family support network and a multidisciplinary team—including doctors, psychologists, and nutritionists—proved crucial for promoting comprehensive care and developing the independence of these individuals.[17,21,26]

CONCLUSION

The management of T1D in children and adolescents depends on emotional, social, and economic factors, with a direct impact on glycemic control and quality of life. Factors such as difficulties in managing the disease, family stress, social rejection, and socioeconomic conditions hinder T1D control and increase emotional stress in children and adolescents, leading to anxiety, binge eating, low self-esteem, depression, and, in severe cases, suicidal ideation.

Family and school support networks, multidisciplinary care, self-care education, and monitoring technologies promote autonomy, acceptance of the disease, and adherence to treatment. Integrated strategies that consider psychological, social, and technological aspects are essential to optimize care and foster the development of resilient and independent individuals.

The main limitations of this review include the predominance of qualitative studies, geographic and cultural limitations of the samples, which restrict the understanding of the impact of T1D in different socioeconomic contexts, and methodological heterogeneity, which hinders comparisons and reproducibility of results. Therefore, it is suggested that longitudinal and multicenter studies be carried out with larger samples, capable of assessing the evolution of psychosocial impacts over time and exploring psychoeducational interventions, self-care strategies, and family support, integrating biological, psychological, and social markers, in order to assist more effective clinical practices.

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