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Interventions to facilitate the transition of children with Type 1 Diabetes Mellitus into the community: a scoping review

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Abstract

Objective

This review aims to map and identify in the scientific evidence the facilitating interventions in the transition to the community of school-age children with Type 1 Diabetes Mellitus.

Method

This scoping review is based on Joanna Briggs Institute's methodology. Published studies of a quantitative, qualitative, or mixed nature, as well as grey literature in Portuguese, English, Spanish, or French, produced between 2016 and 2021, were included. Eight studies were included in this review, selected from the following databases: CINHAL; MEDLINE; MedicLatina; Eric; Cochrane CRCT; Cochrane CA; Cochrane DSR; Cochrane MR; Nursing Reference; JBI. Results were extracted using an instrument constructed by the authors, aligned with the question/objective, and expressed in a narrative summary, including areas of emphasis for future research.

Results

We identified three major categories of facilitating interventions in transitioning school-age children with Type 1 Diabetes Mellitus into the community; the existence of resources and support systems, the development of disease management skills (knowledge, modeling, and training), communication, and continuity of care.

Conclusions

actors related to environmental, professional, organizational, and family conditions, influence the transition of school-age children with Type 1 Diabetes Mellitus into the community. They highlighted support systems, the development of Type 1 Diabetes Mellitus management skills (knowledge and training), and communication/continuity as a focus of attention in developing interventions promoting a safe transition.

Keywords

Diabeltes Mellitus Type 1; Transitional Care; Child; Family.

Introduction

Type 1 Diabetes Mellitus (T1DM) is an autoimmune disease in which the immune system destroys the pancreas's insulin-producing beta cells[1]. Insulin is the hormone that controls glucose levels in the blood, which is necessary for the functioning of cells and energy production and is also essential for the metabolism of fats and proteins[1-2]. Insulin deficit causes a metabolic disorder characterized by hyperglycemia, ketoacidosis, and death if not detected and corrected. It is considered the most common chronic disease in childhood, with an increasing incidence rate worldwide[1]. Europe has one of the highest prevalence rates in the world[1], with a rate of 0.16%[3] in Portugal. Multifactorial causes justify these numbers, including genetic vulnerability, environmental influence, lifestyles, and health behaviors[1].

Inappropriate management of the T1DM therapeutic regimen may, in the long term, re-

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sult in microvascular and macrovascular comorbidities, autoimmune diseases, changes in child development and growth, and neurological and mental health changes[4]. Thus, adequate therapeutic management of T1DM is essential for metabolic control, maintaining the quality of life of children with T1DM, preventing comorbidities, and reducing hospitalizations[4]. This therapeutic management implies education, support, and promotion of a healthy diet, physical activity, and mental health[4], in addition to therapeutic and insulin adherence and glycemic control[5].

School-aged children (6-11 years old) are in the concrete-operational stage of Piaget's cognitive development[6], so they do not yet have the mental capacity to visualize the sequelae and consequences related to inadequate therapeutic management[7]. Thus, the family also assumes the role of a therapeutic manager; therefore, T1DM is considered a family disease[8]. The concept of family has undergone a series of changes in its structure and dynamics in the last decades. However, regardless of its number of elements, it can be defined as a fundamental unit for health promotion and maintenance since it is in the family that behaviors and lifestyles are acquired[9]. The diagnosis of T1DM involves a significant change in family routines, making the family vulnerable to stress and emotional disorders related to anguish, fear of complications, and often the difficulty of managing diabetes outside the family environment[10-11]. They add responsibilities related to the therapeutic management of T1DM, and its adaptive process in the family, namely with capillary blood glucose monitoring, multiple insulin administrations, accounting, and surveillance of carbohydrate intake[10].

A multidisciplinary intervention is necessary, in which family-centered care is the priority[4,12]. Empowering the family to manage the child's T1DM according to their needs, family structure, and dynamics facilitates the adaptation process to T1DM and decision-making[11]. Family empowerment aims to recognize their needs and increase the management competence of T1DM, its supervision, support, and education, and progressively promote the child's involvement according to its developmental stage[11]. Family becomes expert caregiver-child with T1DM and a crucial partner of nurses in care during hospitalization and after discharge.

The school-age child is at the beginning of socialization and schooling. Therefore the adaptation and therapeutic management of T1DM is more vulnerable to the influences of the school context and peers[6]. Experiencing at the moment of hospital discharge are feelings of helplessness, isolation, fear, depression, insecurity, lack of knowledge, and doubts regarding the possibility of returning to their jobs, of the child returning to school and socializing with friends[13,14].

A community comprises individuals with common characteristics and interests, including the child, family, neighborhood, friends, the physical environment, educational services, health and social services, and leisure spaces[15]. A partnership s built in each interaction between the nurse and the child and family[16], articulating with the community to promote health, and quality of life, identifying and mobilizing support resources[16]. School-age children with T1DM and their families experience periods of transition related to the development process and the diagnosis of a chronic disease that destabilizes the family routine and dynamics. A transition concerns the transfer of care responsibilities from professionals to caregivers to promote continuity and safety[17]. The passage from a state of stability to another equally stable condition is characterized by a transition, which can be expected or unexpected and cause vulnerability and insecurity[18]. Studies that identify the factors involved in a safe transition in individuals with chronic conditions highlight the continuity of care, the relationship between health professionals and family members, and the knowledge and involvement in therapeutic management[19].

According to the World Health Organization[20], an inadequate transition to home is responsible for increased: mortality, morbidity, adverse events, lack of support, delay in access to adequate care and community support systems, need for health services, and the number of emergency episodes, need for additional examinations, avoidable hospital readmissions, pain, emotional and physical suffering for the child and family, as well as their dissatisfaction.

The promotion of continuity care for children and families with T1DM, with timely discharge planning, contributes to the quality of life, support perception, therapeutic adherence, and minimization of health costs, representing a strategy and health policy to be followed by health services[21-22]. Still, and despite the above, the transition from hospital to the community is only sometimes carried out efficiently, ensuring support for the adaptive process and the needs felt at discharge[22].

Thus, this review aims to map and identify the available scientific evidence in the literature about the interventions that facilitate the transition to the community of school-age children with hospitalized T1DM.

Methods

Study Design

This scoping review was conducted following the JBI methodology for scoping reviews. An initial search was done in the Joanna Briggs Institute Database of Systematic Reviews and Implementation Reports and MEDLINE and CINAHL databases. No Systematic Review of the Literature carried out or under development on the topic was found in the scientific evidence. An initial research question was defined for its implementation, following the Participants, Concept, and Context (PCC) model, which also guided the inclusion criteria. The protocol of this review was not registered or published.

Objective/Research Question

This review aims to identify and map in the scientific evidence the facilitative interventions for the school-aged child with T1DM.

What interventions facilitate the transition to the community of the school-aged child with T1DM?

Research Questions

What interventions do nurses perform to facilitate the transition to the community of the school-aged child with T1DM?

What strategies are used by health care professionals that facilitate the transition of the school-aged child with T1DM to the community?

What are support systems described as facilitators in transitioning the school-aged child with T1DM to the community?

Selection Criteria

The present scoping review had as inclusion criteria all qualitative and quantitative studies and all types of Systematic Literature Reviews published in Portuguese, English, Spanish, or French. We defined the studies published in the last five years (2016 to 2021) as inclusion criteria to search for the most recent and innovative interventions (telemedicine/videoconferencing/Apps).
Regarding participants, as an inclusion criterion, we considered all studies involving school-aged children with T1DM. About the concept, the requirements were all studies that addressed the transition to home/community. Regarding the context, we considered studies that involved transitioning school-age children with T1DM to the community, whether in hospital settings, pediatric services (inpatient and outpatient specialty consultations), or at home.
Studies that did not include school-age children with T1DM among the target population were excluded.

Data Collection

The research strategy was based on the inclusion criteria defined in the PCC and was performed in three stages, following the Joanna Briggs Institute (JBI)[23] methodology.
Step 1- An initial search of the MEDLINE (Medical Literature Analysis and Retrieval System Online) (via EBSCO) and CINAHL (Cumulative Index to Nursing and Allied Health Literature Complete) (via EBSCO) databases was performed using natural language terms. Natural language terms in the title and abstract and index terms describing the resulting articles were analyzed. Based on the identified natural language and indexed terms, the concepts that correspond to the definition of Participants, Concept, and Context (PCC) were grouped using the Boolean operator OR between the terms that define the critical concept and the Boolean operator AND between the terms that describe the participants, concept, and context.

Search Expression:

(((child* [title/abstract] AND (diabetes [title/abstract] OR diabetes mellitus type 1[title/abstract] OR diabetes mellitus type I [title/abstract] OR "diabetes mellitus type 1" [MeSH term])) AND ((community [title/abstract] OR home [title/abstract] OR "community integration" [MeSH term] OR "community reintegration" [CSH term]) AND (transition* [title/abstract] OR continuity care [title/abstract] OR discharge transition [title/abstract] OR coordination[title/abstract] OR transitional care [title/abstract] OR safe transition [title/abstract] OR "continuity of patient care" [MeSH term] OR "transitional care" [MeSH term])) AND ((hospital [title/abstract] OR pediatric hospital [title/abstract] OR hospital units [title/abstract] OR pediatric unit [title/abstract] OR pediatric nursery [title/abstract] OR hospital discharge[title/abstract] OR "hospital units" [MeSH term] OR "pediatric hospital" [MeSH term] OR "pediatric units" [CSH term])))
Step 2 - Subsequently, an extensive search was conducted in April 2021 for all selected natural language and indexed terms in the databases CINHAL complete, Medline complete, JBI, Cochrane, Eric, MedicLatina, and Nursing Reference.
Google Scholar and RCAAP - Open Access Scientific Repository of Portugal was used to search for articles in grey literature.
Step 3- In this stage, the references of the identified articles were searched to find additional sources.
From the retrieved articles, duplicates were excluded. Two independent reviewers analyzed the remaining articles based on the relevance of the title and abstract, keywords, and MeSH indexing terms. In case of doubt, the full text was read.
After selecting all publications, the articles were considered for reading in full and evaluated in detail against the inclusion criteria. In case of disagreement, it was resolved with recourse to a third reviewer to determine publication eligibility.

Data Analysis

For the studies meeting the inclusion criteria were extracted data relevant to answering the research question and objectives of this scoping review. A data extraction tool was developed to facilitate consultation of the study's-specific characteristics, population, concept, context, and study methods. The results were grouped concerning facilitative interventions in the transition to the community of the school-aged child with T1DM. Data were extracted by two reviewers independently. Disagreements that arose were resolved through discussion or using a third reviewer. The authors of the articles were contacted to request missing or additional data when necessary.
Because this was a scoping review, no quality assessment of the articles was carried out.

Results

As shown in the flowchart (Figure 1), 162 potentially relevant articles were identified in the databases above, and two were removed because they were duplicates. The title and abstract were analyzed according to the inclusion and indexing criteria, and 146 were excluded. Fourteen articles were left for full-text reading, and one was excluded because it was incomplete and impossible to acquire, which we consider a limitation. After reading the full text of the thirteen articles, we proceeded to their analysis, excluding seven articles for not meeting the inclusion criteria. We added two articles from the gray literature to the remaining six and analyzed them for compliance with the inclusion criteria. Finally, eight articles were included in this scoping review, which is summarized in table 1. The countries of origin, types of studies, professionals involved, and interventions identified are described in narrative form.

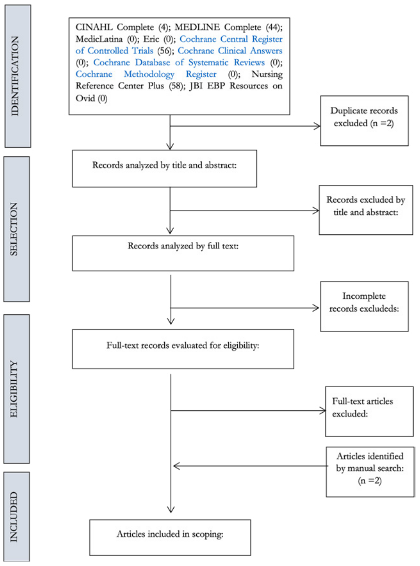

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Figure 1 – PRISMA flowchart (adapted) of the study selection process (Tetzlaff & Altman, 2009).
Font: Moher, Tetzlaff, and Altman (2009).

Autor/Ano	Objetivo (S)	População	Conceito	Contexto
1. Sparud-Lundin, C e Hallström, I, 2016 (24)	To explore parents' experience of two approaches to care: hospital-based care and home care.	Thirty-six dyads: seventeen in the hospital care group and nineteen in the hospital-based home care group. Fourteen were school-aged children.	Environmental and learning conditions for returning home were analyzed.	Hospital Hospital Home Care
2. Schub T e Smith N, 2017(25)	Develop an intervention program that promotes the empowerment and adaptation of children, adolescents with DM1, and families.	School-aged children, adolescents, and families.	Identified interventions promote empowerment for therapeutic management of DM1 beginning at hospital admission and possible resources in the community.	Hospital
3. Pennafort VPS, Queiroz MVO, Nascimento LC e Guedes MVC, 2017(26)	To understand the influence of the child and family's way of life, and their social support networks, to guide the child's care with DM1.	Twenty-six mother-school-age child dyads were identified.	The support networks identified were family, friends, school, living with other families of children with DM1, spiritual beliefs, and health professionals.	A referral ambulatory specialized in the treatment of Diabetes.
4. Wolkers PCB, Pina JC, Wernet M, Furtado MCC e Mello DF, 2019(27)	To study the trajectory and follow-up of children with DM1 by the health services, the coordination between the services, the child, and their families.	46 Mothers, eight fathers, and two grandparents (of the 56 children with DM1 involved, 46 were aged between 6 and 11 years)	The data were categorized with the lack of qualified professionals; difficulties in access; communication deficit between health services; insecurity in other services; excessive bureaucracy; the need for humanization, and individualization in care and coordination.	Outpatient Clinic of the Municipal Center for Diabetic Care of Minas Gerais and the Pediatric Outpatient Clinic of the University Hospital
5.Schiaffini R, Barbetti F, Rapini N, et al., 2020(28)	To evaluate the effectiveness of exclusive return to parental care in preschool and school-age children with DM1 with the Tandem Basal IQ system during the COVID-19 pandemic.	22 dyads (parents - children aged 3 to 10.5 years) All children had Tandem Basal IQ technology for metabolic management and control.	Metabolic control through MCG was compared between the last two weeks of the end of the pandemic and the two weeks of pandemic confinement to COVID-19.	Diabetes Unit of Bambino Gesù Children's Hospital
6. Klee, K, Thomas, K, Atkins D e Ness K, 2020(29)	To explore the families' perceptions of children with DM1 about the training received and their ability to transfer learning to the home to improve educational content.	Families of children (3 - 16 years) with DM1 native to an East African country	Defined two related categories one related to the empowerment process obtained at the time of hospitalization, the other associated with the transition of knowledge to the home.	Hospital endocrinology consultation
7. Braune K, Boss K, Schmidt-Herzel J, Gajewska KA, Thieffry A, Schulze L, et al., 2021(30)	To evaluate and analyze the success factors and barriers in transitioning from conventional to digital care in children with DM1 and their families.	Twenty-eight children (3-12 years) with DM1 were on an insulin pump and their caregivers.	Remote consultations, with clinical data access through digital tools: analyzed satisfaction and possible inclusion of this type of follow-up.	University Hospital
8. Tong H-J, Qiu F e Fan L, 2021(31)	To explore the influence of the hospital discharge plan based on the parental care needs of children with DM1.	One hundred two dyads: children (59 school-aged) with DM1 and family members.	Implemented a transition plan to promote continuity of care after discharge.	Hospital nursery

Table 1 – Selection and description of the articles

Countries of origin

Of the included articles, 2 originated in Brazil[26-27], 1 in China[31], 1 in Italy[28], 1 in Sweden[24], 1 in Canada[30], and 2 in the United States of America[29, 25].

Study Types

Of the eight articles, two are quantitative studies[28, 31], three are qualitative studies[26-27, 29], two are mixed methods[24, 30], and one concerns a procedure/guideline manual[25].
Of the quantitative studies, one uses the retrospective observational method[28], and the other uses quasi-experimental research using a prospective clinical trial[31].
One of the three qualitative studies uses a phenomenological approach[26].
Of the two mixed studies, both use the interview in the qualitative strand; in the quantitative strand, one presents a longitudinal prospective cohort design, and the other a randomized controlled clinical trial[24, 30].

Professionals Involved

Of the eight articles, five studies were conducted by nurses[25-27,29, 31], two by physicians[24,28], and one by a multidisciplinary team consisting of physicians, nurses, nutritionists, psychologists, and social workers[30]. It can be seen that most of the studies were conducted by nursing professionals.

Intervention and Evaluation

One of the studies refers to developing a care plan focused on the child with T1DM and the family to support professional practice[25]. In turn, it is highlighted as a facilitating intervention for the transition and the decision-making and therapeutic adherence; individualized care focused on the needs and the environmental/cultural context where the child and family are inserted to facilitate[26,28-29]. The study by Tong, Qiu, and Fan[31] presents a facilitating intervention for the transition of a hospital discharge plan with continuity after discharge through follow-up consultations via telephone or WeChat. Another study shows that Hospital Home Care proved to be an essential facilitating intervention for the transition to the community due to its real character to the empowerment process[24].

Promoting a fluid intersectoral communication that ensures the continuity of care among the various health institutions and professionals was pointed out as an intervention that fosters satisfaction, safety, and confidence for adequate therapeutic management[27].

The social support network for families and the technological social support tools are also described as facilitating interventions[26], as well as the support given by the school community to families of children with T1DM regarding adequate therapeutic management of T1DM during the school period[28]. In the latter, it is essential to highlight the empowerment of the school community and the adoption of new interventions, such as telemedicine, focused on supporting the school community[25]. As new interventions allied to technology and adaptation to a digital context, remote consultations through digital platforms are identified as facilitators of the transition[30].

Summary of Results

Considering the results that emerged to answer the research question, we can group them into three categories, the resources/support Systems that facilitate the transition, skill development (knowledge, modeling, and training), and communication.

The Transition Support Systems/Resources

Several support systems/resources were pointed out as facilitators indicate the transition process of the child and family to the home. At the moment of diagnosis and return home, the family feels fear and overload related to the complex care that the health condition requires, even before understanding and adapting to it. They reveal the importance of tailoring information to the family's needs and cultural specificities to reduce the negative impact. It also shows that the presence of interpreters in health education sessions is a favorable factor, even though it can sometimes be confusing because it is subject to the interpreter's interpretation[29].

The school community is considered a supportive factor in the transition[26,28], with lower metabolic control in this setting compared to exclusively parental care[28] in the period of confinement due to the COVID-19 pandemic. As well as school, religion, friends, other caregivers, and the health team contribute to the development of coping strategies and resolution of adversities related to child care. It should involve, in addition to the family, other caregivers, friends of the child, and the school community, so the promotion of culturally sensitive care is an essential contribution to the quality of life of children with T1D and their families[26, 25].

Informal support groups have proven to be an essential support strategy in the context of knowledge about T1DM and sharing of experiences in which families/caregivers demonstrate the need to develop formal actions in this area[26].

Using technologies and remote consultations (virtual) are considered beneficial for children and families, promoting involvement and decision-making[30].

Hospital-based home care, which consists of home assistance by the hospital team, is considered a resource more oriented to the family and its needs, giving the family a feeling of greater preparedness and confidence in returning home. It promotes situational learning, as it is more similar to daily life and requires reflection and decision-making, although supported by the nurse (telephone contact and visit)[24].

The involvement of the multidisciplinary team (doctor, nurse, nutritionist, and psychologist) in caring for the child with diabetes and his family is also pointed out as essential in the care during the transition process[25,30-31].

Skills Development (Knowledge, Modeling, and Training)

The family and caregiver's knowledge about T1DM (pathophysiology, signs, symptoms, clinical manifestations, and its treatment) is fundamental for acquiring autonomy in therapeutic management. It is a determinant for a successful transition to home[24-26,28-29,31].

At this stage of development, school-aged children can initiate the process by manipulating equipment, and drawings and images can be used to integrate the educational message[25]. They also mention attending summer camps for children with T1DM as a facilitating strategy for developing skills in managing T1DM[25].

Adequacy of teaching plans for the child and family, considering their culture and lifestyle, is described[29] as a strategy to be integrated into care.

The development and implementation of a hospital discharge plan proved to be a strategy to improve discharge preparation, promote therapeutic adherence, decision-making at discharge, and better glycemic control. The elaboration of an empowerment plan adopted thematic education sessions for children with DM1 and their families, and skills training through the talk-back and demo-back teaching methods[31] was appointed as an effective strategy.

Related to professional empowerment, professionals need to improve their skills in caring for children with T1DM and their families in the various health services[27] as a way to promote safety care, the confidence of parents of children with T1DM when they need to use services that go beyond the specialty consultation.

Communication / Continuity

Family members and caregivers of the child with T1DM reported barriers to a successful transition: the poor communication between health institutions/health services, the fragility of the link with the specialized follow-up services for the child with T1DM and his family (endocrinology consultations), a health services approach very focused on the pathology as inefficient when facing the complexity of chronic conditions, compromising the safety and humanization of care, increasing vulnerability, accompaniment in decision making and misinformation. They highlight the need for intersectoral actions, social participation, and coordination of care networks, promoting access and inclusion[27] through:

- the training of the health services team in the care of children with DM1 and their families to organize, coordinate, and make expert care in this area; through health education practices for the child and family,
-the creation of reflective spaces with qualified listening, exchange of experiences, and valorization of knowledge;
- the possibility of telephone service for network referral, continuity of care, and support; through home visits for greater specificity in the face of the daily doubts, allowing a focused and humanized follow-up of the child with T1DM and its family.

Telephone follow-up and Wechat intervention (online) after discharge, gradually spaced (1 week, one month, three months), were strategies that facilitated a successful transition to metabolic control[31].

School-centered telemedicine, in which the multidisciplinary team (physician, nurse, psychologist, and nutritionist) remains in telephone contact with the school, in a perspective of support, support and empowerment for adequate therapeutic management of T1DM, was also pointed out as a strategy that facilitates the continuity of care of children with T1DM at school[25].

The remote follow-up consultations (online) performed during the pandemic by COVID-19 were also considered by families as a good strategy, increasing the proximity between professionals and families and improving the quality of life of children with T1DM. They suggest that they should be maintained in the future[30].

Hospital home care was another highly valued strategy. It offers a more gradual transition home, with the possibility of moving to a hospital home, with supervision by health professionals, and returning home during periods of the day (e.g., the child and family stay at the hospital home during the day and going to sleep at home)[24].

Discussion

Eight studies were found in the last five years, answering the initial research question, "What interventions facilitate the transition to the community of the school-aged child with T1DM and their families?".

The extensive and available evidence mapped in this scoping review indicates that support systems, such as health professionals, the community, an educational plan, and a hospital discharge plan, are essential focuses for the development of transition-facilitating strategies.

The studies found that the promotion of empowerment of school-age children with T1DM and their families for therapeutic management, autonomy, and decision-making was the most valued intervention for a safe transition from hospital to home. Tong, Qiu, and Fan[31] reported that educational interventions directed at parents of children with T1DM to promote the acquisition of skills and abilities before hospital discharge, with a focus on problem-solving and self-management skills, are fundamental for the transition from hospital to home. A high-quality education in preparation for hospital discharge is essential to ensure that care continues to be provided after discharge, prevent complications, and reduce rates of hospital readmissions for complications[31]. Sy[32] reports that effectively empowering the child with DM1 and the family decreases healthcare costs and increases satisfaction with the healthcare provider. The results show that nurses feel insecure, related to a deficit in the knowledge needed to promote empowerment, so she developed a training plan directed to nurses, facilitating the process of acquiring skills focused on the professional and the family. This training plan included, in addition to the theoretical component, the training of simulations in professionals. Include instruments development and support resources for the professional, such as an educational plan to be implemented in the child and family, from admission to discharge. It should be flexible to the needs and individualities of the client[32].

Empowerment and expertise of the professional are described in one of the studies as a facilitator of access to health care and follow-up of children with T1DM in the various public services[27]. Results corroborated by the findings of the study by Sparud-Lundin and Hallström[24], where they refer that family members feel insecurity and frustration when they perceive that the nurse is not an expert in T1DM. This feeling of doubt and insecurity may be a barrier to developing T1DM management skills.

The child with T1DM and family empowerment process begins in the hospital immediately after the diagnosis and completed in an average of three days[31]. Hence, caregivers describe the learning process as "overwhelming and complex"[29]. In this sense, the same author, corroborated by Pennafort et al.[26], refer that it is necessary to adjust the rhythm of training and empowerment by the process of adaptation to the diagnosis, to the changes in lifestyle, to the emotional state and availability for learning of the child with DM1 and his family.

It is also relevant in this domain that the care provided be culturally competent and appropriate to the individuality of each child with T1DM and their family. One of the studies with caregivers and families from East Africa revealed a dissonance in the adequacy of culturally competent teaching and cared when the carbohydrate counting training in the hospital was done with foods and meals significantly different from their habits at home[29]. However, the authors mention a limitation of the small number of participants in the sample; the results alert the need to consider immigrant families' culture, religion, traditions, and eating habits in these training programs for managing T1DM[29].

Communication is another aspect mentioned as a facilitating intervention in the transition of the child with T1DM and their family from hospital to home, the accessibility to information on health and respective care. It is related to the health professional's understanding and mastery of their language. Cultural differences interfere with the knowledge of the orientations given and, when not perceived, make these families more vulnerable and at risk. Families need a health professional who speaks their mother's language so that during the training process and access to care, the information is not subject to the translator's interpretation[29].

Good inter-sectoral communication and articulation are highlighted as fundamental conditions for a safe transition. One of the studies refers to a barrier to the care of the child with T1DM, the fact that health care is fragmented and organized into isolated points of care with no communication between them, which puts safety and continuity care at risk[27]. This study reveals that the communication deficit between professionals compromises the critical health care of these children and families. The family members and caregivers described as facilitating intervention a telephone contact available continuously and home visits, in addition to greater specialization in care and monitoring[27].

The results of this Scoping Review highlight that the community, such as school, friends, social support network, family members, and health services, are the focus of attention for developing transition-facilitating strategies. However, one of the studies reveals that only sometimes the school community has the necessary knowledge for the appropriate therapeutic management of a child with DM1[28]. Since school is a context where children spend much of their day, it is essential that the educational community has the necessary skills and training to promote a safe environment for children with T1DM and to maintain their glycemic control. The lack of knowledge to provide continuity of care in the therapeutic management of a child with T1DM may jeopardize the trust and safety felt by parents[28]. School and friends represent essential social support for diabetes control.

On the one hand, friends can play a facilitating role in the process of adaptation to the condition, management, and care in situations of intercurrence or, on the other hand, negatively influence food choices[26]. Schiaffini et al.[28] reinforce the need to strengthen the skills in managing T1DM in this context when they refer to their results that the glycemic levels of children were more controlled during the confinement caused by the COVID-19 pandemic, a period in which parents were the only caregivers when compared to the values in the previous period. School-centered telemedicine emerges as a way to promote effective articulation with the school and facilitate the child with T1DM transition to the community[25]. Informal social networks between mothers and caregivers are described as favoring the transition process to home, constituting necessary support, promoting confidence, and adapting to the child's disease. The importance of developing formal actions by professionals that enable the mothers of children with T1DM to meet others to share and make visible sociocultural issues[26].

The construction of an inpatient discharge plan proved to be an essential intervention to be integrated at the institutional level. Promotes the transition from a hospital setting to the community, starting at admission and continuing until after discharge, through telephone consultation and intervention by WeChat. Family and the child with T1DM show satisfaction when the health professionals prepare the discharge plan adjusted to their needs[31].

The adoption of hospital home care, in which the child and family, after clinical stability, are transferred (hospital house). With the support of nurses and the remaining multidisciplinary team, the empowerment process is developed and proved to be an effective intervention facilitating the transition and effective empowerment regarding glycemic control. Parents reported greater satisfaction, confidence in returning home, more knowledge, and greater involvement in decision-making. It was an intervention in an environment similar to their home and normal daily activities compared to the hospital environment and its stressors[24]. More personalized to the difficulties experienced in everyday life and focused on solving concrete problems, facilitate the adaptation to home care and consequent receptiveness to learning. During the COVID-19 period, an online consultation using digital platforms was highlighted by family members as stress-reducing. The possibility of being in a more comfortable, safe, and familiar context increased commitment[30]. However, they mention the constraint of dependence on technology (insulin pumps, continuous glucose monitoring, electronic health records, computer, and internet connection) and the necessary technological literacy[30].

The emphasis given to the contribution of the multidisciplinary team involved in the transition process with the training for the therapeutic management of T1DM was noteworthy. That affects not only glycemic and insulin control but also dietary adequacy, physical exercise, prevention, and management of complications, in addition to the necessary intervention of psychology for developing coping strategies and emotional control[25, 30-31].

Conclusions

This Scoping Review allowed mapping of the available scientific evidence on the interventions facilitating the transition to the community in school-age children with T1DM and providing an effective response to the proposed objective and research question.

The strategies found in this review are interconnected, and the transition to the community implies a complex and multidimensional response.

The following strategies emerged as facilitating a safe transition: the individualization and culturally competent care; the development of a transition plan for discharge with continuity after the hospital; the need to formally create support groups to share knowledge and experiences among caregivers; effective communication and articulation of care between services for a comprehensive follow-up of the health of the chronically ill child, with emphasis on digital/virtual solutions; monitoring by a reference professional, an expert in T1DM was considered fundamental to transmit safety, trust, and quality in the process of empowering parents; the involvement of the school community, suggesting the use of telemedicine focused on the school; online consultations, as a strategy to reduce the hospitalization stress and promote the continuity of care at home; the creation of a telephone helpline to support the family of the child with chronic disease, and finally the emphasis on hospital home care as a hospital care that promotes the transition and easier return home. The support systems, the development of T1DM management skills (knowledge and training), and communication/continuity are highlighted as a focus of attention in developing interventions promoting a safe transition. We can conclude that the transition is influenced by environmental, professional, organizational, and family factors.

It is essential to highlight the new forms of care allied to technological development that have emerged with the pandemic by COVID-19 and may be crucial solutions that facilitate a safe transition for children with T1DM and their families.

The exclusion of one article because it was impossible to acquire it was a limitation of this review.

Implications For Research

Future primary studies should seek to know the transition strategies toward promoting continuity of care and intersectoral articulation since it was one of the gaps we identified in this scoping review.

Implications For Practice

Emerging from this scoping review is a set of interventions with the potential to be effective in facilitating the transition to the community of the school-aged child with T1DM. Because they were conducted in countries with different health policies, it suggests the need for primary studies evaluating the effectiveness of these strategies/interventions, such as hospital-based home care and school-centered telemedicine in Portugal. This scoping review allowed for the perspective of evolution in more person-environment-centered care.

Conflicts Of Interest

There are no conflicts of interest regarding this scoping review.

References

1. International Diabetes Federation. IDF Diabetes atlas [Internet]. 9th ed.; Bruxelas: International Diabetes Federation; 2019 [citado em 2020 Ago 20]. p.26-66. Disponível em: https://www.diabetesatlas.org/en/

2. World Health Organization. Noncommunicable diseases [Internet]. Geneva: WHO; 2018 [citado em 2020 Ago 20]. Dispo-

nível em: https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases

3. Sociedade Portuguesa de Diabetologia. Diabetes: Factos e números: O ano de 2015: Relatório anual do Observatório da Diabetes [Internet]. Lisboa: SPD; 2016 [citado em 2020 Ago 21]. Disponível em: https://www.sns.gov.pt/noticias/2017/03/15/diabetes-factos-e-numeros-2015/

4. American Diabetes Association. Children and adolescents. Diabetes Care [Internet]. 2017;40(Suppl 1):S105-S113. [doi:10.2337/dc17-S0152017](https://doi.org/10.2337/dc17-S0152017)

5. Direção-Geral da Saúde. Crianças e jovens com Diabetes Mellitus tipo 1: Manual de formação para apoio aos profissionais de saúde e de educação [Internet]. Lisboa: DGS; 2019 Set. [citado em 2020 Ago 20]. Disponível em: https://www.dgs.pt/documentos-e-publicacoes/criancas-e-jovens-com-diabetes-mellitus-tipo-1-manual-de-formacao-para-apoio-aos-profissionais-de-saude-e-de-educacao-pdf.aspx

6. Papalia DE, Feldman RD. Desenvolvimento humano. 12ª ed. Porto Alegre: AMGH editora Lda; 2013.

7. Silverstein J, Klingensmith G, Copeland K, Plotnick L, Kaufman F, Laffel L, et al. Care of children and adolescents with type 1 diabetes: A statement of the American Diabetes Association. Diabetes Care. 2005 Jan.; 28(1):186–212. doi: [10.2337/diacare.28.1.186](https://doi.org/10.2337/diacare.28.1.186)

8. Christie D. How do children and adolescents understand their diabetes? Pract Diabetes. 2019 Jul; 36(4):117. doi: [10.1002/pdi.222](https://doi.org/10.1002/pdi.222)

9. Regulamento nº 351/2015. Regulamento dos padrões de qualidade dos cuidados especializados em enfermagem de saúde da criança e do jovem. Ordem dos Enfermeiros. Diário da República, 2.ª série [Internet]. 2015 [citado em 2020 Ago 21] p.16666-16665. Disponível em: https://dre.pt/application/conteudo/67552235

10. McConville A, Noser AE, Nelson E-L, Clements MA, Majidi S, Patton SR. Depression as a predictor of hypoglycemia worry in parents of youth with recent-onset type 1 diabetes. Pediatr Diabetes. 2020 Ago; 21(5):909–16. doi: [10.1111/pedi.13039](https://doi.org/10.1111/pedi.13039)

11. Sparapani VC, Nascimento LC. Children with type 1 diabetes mellitus: Strengths and weaknesses in the management of this disease. Cien Saude Colet. 2009 Abr; 8(2):274–9. doi: [10.4025/cienccuidsaude.v8i2.8211](https://doi.org/10.4025/cienccuidsaude.v8i2.8211)

12. Nascimento LC, Amaral MJ, Sparapani VC, Fonseca LMM, Nunes MDR, Dupas G. [Type 1 diabetes mellitus: evidence from the literature for appropriate management in children's perspective]. Rev Esc Enferm USP. 2011 Jun; 45(3):764–9. doi:[10.1590/s0080-62342011000300031](https://doi.org/10.1590/s0080-62342011000300031)

13. Docherty SI, Barfield R, Thaxton C & Brandon D. Cuidado centrado na família de crianças com necessidades especiais. In: Hockenberry M, Wilson D, editores. Wong enfermagem da criança e do adolescente. 9ª ed. Rio de Janeiro: Elsevier; 2014. p. 515-455.

14. Nieto-Eugenio I, Ventura-Puertos PE, Rich-Ruiz M. S.O.S! My child is at school: A hermeneutic of the experience of living a chronic disease in the school environment. J Pediatr Nurs. 2020 Jul; 53:e171–8. doi: [10.1016/j.pedn.2020.03.016](https://doi.org/10.1016/j.pedn.2020.03.016)

15. Brosnan CA, Upchurch SI, Gallagher MR. Cuidados à criança e à família com base na comunidade. In: Hockenberry M, Wilson D, editores. Wong enfermagem da criança e do adolescente. 9ª ed. Rio de Janeiro: Elsevier; 2014. p.17-21

16. Regulamento nº 422/2018. Regulamento de competências específicas do enfermeiro especialista em enfermagem de saúde infantil e pediátrica. Ordem dos Enfermeiros. Diário da República, 2.ª série [Internet]. 2018 [citado em 2020 Ago 21] p.19192-19194. Disponível em: https://dre.pt/application/conteudo/115685379

17. Direção-Geral da Saúde. Comunicação eficaz na transição de cuidados de saúde. Norma 001/2017 [Internet]. Lisboa: DGS; 2017 [citado em 2020 Ago 20]. Disponível em: https://www.dgs.pt/directrizes-da-dgs/normas-e-circulares-normativas/norma-n-0012017-de-08022017-pdf.aspx

18. Meleis AI. Transitions: a central concept in nursing. In: Meleis AI, editor. Transitions theory: Midle range and situations-specific theories in nursing research and practice. New York: Springer Publishing Company; 2010. p. 38-51.

19. Bonati M. Transitioning youth to adult age also through health services. Epidemiol Psychiatr Sci. 2020 Jan 9; 29:e88. doi: [10.1017/S2045796019000842](https://doi.org/10.1017/S2045796019000842)

20. World Health Organization. Transitions of care: Technical Series on Safer Primary Care [Internet]. Geneva: WHO; 2016 [Citado em 2020 Out 20]. Disponível em: https://apps.who.int/iris/bitstream/handle/10665/252272/9789241511599-eng.pdf?sequence=1

21. Mendes FRP, Gemito MLGP, Caldeira EC, Serra IC, Casa-Novas MV. Continuity of care from the perspetive of users. Cien Saude Colet. 2017 Mar, 22(3), 841-853. doi: [10.1590/1413-81232017223.26292015](https://doi.org/10.1590/1413-81232017223.26292015)

22. Paniagua DV, Ribeiro MPH, Correia AM, Cunha CRFE, Baixinho CL, Ferreira Ó. Project K: Training for hospital-community safe transition. Rev Bras Enferm. 2018 Set 2; 71(5):2264–71. doi:[10.1590/0034-7167-2018-0190](https://doi.org/10.1590/0034-7167-2018-0190)

23. Peters MDJ, Godfrey C, McInerney P, Munn Z, Tricco AC, Khalil, H. Chapter 11: Scoping Reviews (2020 version). In: Aromataris E, Munn Z, editores. JBI manual for evidence synthesis, JBI [Internet]. 2020 [citado em 2020 Ago 21]. Disponível em: https://synthesismanual.jbi.global

24. Sparud-Lundin C, Hallström I. Parents'experiences of two different approaches to diabetes care in children newly diagnosed with Type 1 Diabetes. Qual Health Res. 2016 Ago; 26(10):1331–40. doi: [10.1177/1049732315575317](https://doi.org/10.1177/1049732315575317)

25. Schub T, Smith N. Patient education: Teaching the child or adolescent with Diabetes Mellitus, Type 1. CINAHL Nursing Guide [Internet]. 2017 [citado em 2021 Out 28]. Disponível em: http://search.ebscohost.com/login.aspx?direct=true&db=nup&AN=T705748&site=nup-live&scope=site

26. Pennafort VPDS, Queiroz MVO, Nascimento LC, Guedes MVC. Network and social support in family care of children with diabetes. Rev Bras Enferm. 2016 Set; 69(5):912–9. doi: 10.1590/0034-7167-2015-0085

27. Wolkers PCB, Pina JC, Wernet M, Furtado MCC, Mello DF. Children with Diabetes Mellitus Type 1: Vulnerability, care and access to health. Texto & Contexto Enferm. 2019 Jan; 28:1–17. doi: 10.1590/1980-265X-TCE-2016-0566

28. Schiaffini R, Barbetti F, Rapini N, Inzaghi E, Deodati A, Patera IP, et al. School and pre-school children with type 1 diabetes during Covid-19 quarantine: The synergic effect of parental care and technology. Diabetes Res Clin Pract. 2020 Ago, 166:108302. doi: 10.1016/j.diabres.2020.108302

29. Klee K. Perceptions of diabetes education among east african immigrant parents. Pediatr Nurs [Internet]. 2020 Mai [citado em 2021 Out 28]; 46(3):146–51. Disponível em: https://search.ebscohost.com/login.aspx?direct=true&db=ccm&AN=143616623&lang=pt-pt&site=ehost-live

30. Braune K, Boss K, Schmidt-Herzel J, Gajewska KA, Thieffry A, Schulze L, et al. Shaping workflows in digital and remote diabetes care during the COVID-19 Pandemic via service design: Prospective, longitudinal, open-label feasibility trial. JMIR Mhealth Uhealth. 2021 Abr 5; 9(4):e24374. doi: 10.2196/24374

31. Tong H-J, Qiu F, Fan L. Effect of hospital discharge plan for children with type 1 diabetes on discharge readiness, discharge education quality, and blood glucose control. World J Clin Cases. 2021 Fev 6; 9(4):774–83. doi: 10.12998/wjcc.v9.i4.774

32. Sy V. Empowering staff nurses as primary educators to children with Type 1 Diabetes. Pediatr Nurs [Internet]. 2016 Set [citado em 2020 Out 28]; 42(5):247–51. Disponível em: https://search.ebscohost.com/login.aspx?direct=true&db=mdc&AN=29406645&lang=pt-pt&site=ehost-live