ORIGINAL ARTICLE

ADOLESCENT WITH TYPE 1 DIABETES MELLITUS: CONTRIBUTION TO HEALTH EDUCATION FOR SAFE DISCHARGE

Luciangela Vasconcelos da Silva[1], Bruna da Silva Cardoso[2]
Flávia Avancini Ferreira[3], Ana Christiane Soares de Oliveira[4]
Luz Marina Alfonso Dutra[5], Manuela Costa Melo[6]

Highlights: (1) Playful educational technologies strengthen self-care in adolescents with T1DM. (2) Technology-mediated health education supports safe hospital discharge. (3) Therapeutic play improves learning and treatment adherence in T1DM.

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[1] Escola Superior de Ciências da Saúde (ESCS). Brasília/DF, Brazil. https://orcid.org/0000-0003-0691-1844
[2] Escola Superior de Ciências da Saúde (ESCS). Brasília/DF, Brazil. https://orcid.org/0000-0001-8562-5162
[3] Secretaria de Saúde do Distrito Federal. Brasília/DF, Brazil. https://orcid.org/0000-0003-1684-1544
[4] Escola Superior de Ciências da Saúde (ESCS). Programa de Pós-Graduação em Ciências para Saúde. Brasília/DF, Brazil. https://orcid.org/0009-0004-0015-5114
[5] Escola Superior de Ciências da Saúde (ESCS). Programa de Pós-Graduação em Ciências para Saúde. Brasília/DF, Brazil. https://orcid.org/0000-0002-5154-8901
[6] Escola Superior de Ciências da Saúde (ESCS). Programa de Pós-Graduação em Ciências para Saúde. Brasília/DF, Brazil. https://orcid.org/0000-0002-2018-1801

ADOLESCENT WITH TYPE 1 DIABETES MELLITUS:
CONTRIBUTION TO HEALTH EDUCATION FOR SAFE DISCHARGE

ABSTRACT

Objective: To contribute, through health education, to a safe hospital discharge for adolescents diagnosed with Diabetes Mellitus. **Method:** Action research was employed as the research method, conducted with the target population of adolescents with Diabetes Mellitus. The study setting was a public hospital in the Federal District, Brazil, and it was carried out between October 2022 and May 2023. Health technology tools were used, including a Comic Book, a Memory Game, and a Standard Operating Procedure, which were presented to the adolescent and a family member during a health education session supported by therapeutic play. Participant observation was conducted using a field diary, along with a questionnaire to collect the adolescent's sociodemographic and clinical data. The narrative description of the analysis was developed in light of the theoretical framework. **Results:** The technological tools were identified as useful and appropriate during the session with a 13-year-old adolescent living in the Federal District, accompanied by her mother. The tools were well accepted, and learning was strengthened, contributing to a safer hospital discharge process. **Conclusion:** The intervention expanded the range of options available to health professionals, focusing on the implementation of safe discharge practices and the use of care tools directed at the target population, with the potential to broaden their applicability to other age groups and study settings.

Keywords: Health Services Research; Type 1 Diabetes Mellitus; Play and Playthings; Patient Discharge; Health Education.

INTRODUCTION

Type 1 Diabetes Mellitus (T1DM) is a chronic, autoimmune, multifactorial disease characterized by the destruction of pancreatic beta cells responsible for insulin production. It can affect individuals across different age groups, but it is most commonly diagnosed in children, adolescents, and young adults. In 2019, Brazil ranked third worldwide, with approximately 51,500 children and adolescents (0–14 years) living with T1DM and an estimated 7,300 new cases per year. Thus, when T1DM occurs during childhood, it has significant repercussions on family life as well as on the child's growth and development.[1–2]

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The increasing incidence of Diabetes Mellitus (DM) results from several interrelated factors, such as the rapid process of urbanization, epidemiological and nutritional transitions, sedentary lifestyles, the rising prevalence of obesity, population growth and aging, and increased life expectancy among people living with diabetes. According to the World Health Organization (WHO), hyperglycemia is classified as the third leading cause of premature mortality, preceded only by hypertension and smoking.[1–2]

Living with an adolescent diagnosed with T1DM involves both physiological and emotional responsibilities. These individuals experience processes and circumstances that may lead to physical and psychological discomfort, as the therapeutic management of the disease includes several challenging situations, such as activity restrictions, adherence to a specific diet, distressing procedures, bodily changes, and recurrent hospitalizations. Additionally, they face stressful situations that may affect family life and social relationships.[1]

In this context, health education becomes an essential method for the management of T1DM. Health professionals must consider each patient's realities, experiences, and expectations, as well as the social context in which they are embedded, in order to plan care that effectively meets the users' needs and ensures the successful implementation of proposed interventions. When working with adolescents, it is necessary to respect their expectations and autonomy in order to prevent a series of negative consequences, such as non-adherence to nutritional treatment, impaired self-care, the adoption of unhealthy beliefs and habits, distancing from interdisciplinary teams, and the delegation of care responsibilities to others. Therefore, for treatment to be followed effectively and collaboratively, it is essential to involve the healthcare team, family members, and the adolescent, promoting the management of the condition and achieving psychobiological and social balance in support of safe hospital discharge.[3]

Proper management of T1DM does not rely solely on the control of capillary blood glucose levels but also requires lifestyle changes. Therefore, multidisciplinary care can assist individuals in coping with chronic illness while promoting reassurance, safety, and acceptance.[4] Several strategies may be used in this process, one of which is play. When play is applied in a structured manner, it can provide emotional balance for the ill adolescent,

facilitate coping with the disease, and promote health.[5] It also provides opportunities for relaxation and for understanding the situation in which the adolescent is involved.

Through play, adolescents may acquire new adaptive behaviors and responses that facilitate adjustment to the hospitalization environment.[6] Instructional Therapeutic Play (ITP) is a structured resource that enables the reduction of anxiety related to procedures inherent to the treatment of diseases and also serves as a useful tool in preparing patients for hospital discharge.[5] ITP is a practice with broad applicability in public health contexts, particularly in universal health systems such as Brazil's Unified Health System (SUS) and similar systems in countries such as the United Kingdom's National Health Service (NHS), Canada, and Sweden. For instance, the presence of a "play specialist" is common in the United Kingdom and New Zealand, performing functions analogous to those of therapeutic play professionals in Brazil.

Preparation for hospital discharge often fails to promote the active participation of caregivers in the care of adolescents with chronic diseases. This frequently occurs because care instructions are limited to prescriptions that do not consider the specific characteristics of those involved. Such a verticalized approach is unable to foster processes of family autonomy that enable decision-making related to care and, consequently, the continuity of treatment.[6] In this sense, the choice of action research as the study method, whose primary action involves identifying the problem situation, may allow a clearer and more objective understanding of the issue. The problem must emerge from practice, based on experiences such as those of the multidisciplinary team responsible for the care of adolescents with T1DM hospitalized in pediatric units.

Thus, this study is justified by the need to value health education as an essential tool for guiding the target population and ensuring the appropriate management of the disease during the period preceding hospital discharge for adolescents with T1DM. Conducting this study in the format of action research highlights the importance of promoting awareness and health education among both adolescents and their caregivers,[2] thereby minimizing negative feelings that adolescents may experience and helping them cope with the challenging and often traumatic experience of living with T1DM within the family context.

Given the above, this study was guided by the following research question: How can health education contribute to safe hospital discharge for adolescents with Type 1 Diabetes

Mellitus? Accordingly, the objective of this study is to contribute, through health education, to safe hospital discharge for adolescents diagnosed with Type 1 Diabetes Mellitus.

METHOD

Study Design, Period, and Setting

This study adopted an Action Research design.[7] This type of research seeks to solve specific and concrete problems in the social construction of knowledge through interaction and cooperation among participants, aiming at transformation and the implementation of actions within services. Therefore, it was necessary to understand the context and promote the process of change. The study was conducted within the scope of the Institutional Scientific Initiation Program of the National Council for Scientific and Technological Development (CNPq), supported by the School of Health Sciences, located in Brasília, Federal District, Brazil.

The study was carried out in the pediatric unit of a teaching hospital in the Federal District, a public institution that serves as a regional reference for maternal and child care in the Central-West region of Brazil and provides services exclusively to users of the Brazilian Unified Health System (SUS). The hospital is linked to the Central Regional Health Coordination. It is a medium-sized hospital that provides multidisciplinary care to hospitalized patients.

Study Participants

Participants eligible for the study were selected through a convenience sample, consisting of adolescents hospitalized in the pediatric unit with a medical diagnosis of Type 1 Diabetes Mellitus (T1DM), accompanied by their respective family caregivers. The inclusion criteria were: adolescents with diabetes mellitus who were hospitalized for at least three days and had already received initial guidance regarding daily care practices in both the hospital and home environments; and those hospitalized between January and April 2023, the period during which data were collected for this study. The exclusion criteria included adolescents with diabetes who were not clinically able to participate due to glycemic instability, pain, or other health conditions.

For the purposes of this study, the term “adolescent” refers to individuals aged 12 to 18 years, in accordance with Article 2 of the Brazilian Child and Adolescent Statute (Estatuto da Criança e do Adolescente – ECA).[8] This definition was adopted because different classifications of adolescence exist in the international literature. For instance, the World Health Organization (WHO) defines adolescents as individuals aged 10 to 19 years.

The term “family caregiver” refers to a family member without formal health training, as defined by the Brazilian Ministry of Health and adopted in this study. This individual may be the person directly responsible for the child’s daily care.[9]

Data Collection and Organization

Before implementing the main objective of the study, one of the most relevant stages of action research was conducted: systematic observation. Therefore, an observation was carried out to understand how care was provided to adolescents with diabetes in this setting. This observation was organized into four stages.[7] The first stage consisted of in situ knowledge of the study setting to identify the problem situation. The second stage involved planning actions to address the identified problem. The third stage consisted of implementing the planned actions, specifically the health education session.

The fourth stage involved evaluating the health education session with the participants. During the first stage, in situ observation aimed to identify the problem situation, which in this case was understanding the dynamics of hospital care provided to adolescents with T1DM. Adolescents with diabetes treated in this hospital follow the care pathway established by the Health Secretariat of the Federal District (SES-DF). After receiving a diagnosis of T1DM either in outpatient care or during hospitalization the adolescent is referred to the Specialized Center for Diabetes, Obesity, and Hypertension (CEDOH), where they receive multidisciplinary and interdisciplinary care from nurses, physicians, and nutritionists, as well as access to medications and supplies necessary for daily care.

According to the SES-DF website, approximately 600 children are currently monitored at this specialized center, most of whom are diagnosed with T1DM. The SES-DF provides a Diabetes Mellitus Management Protocol, although it is directed only toward adult

patients. For hospitalized patients, clinical stabilization is required, followed by guidance provided at CEDOH, after which the adolescent–caregiver dyad must be considered ready for hospital discharge.

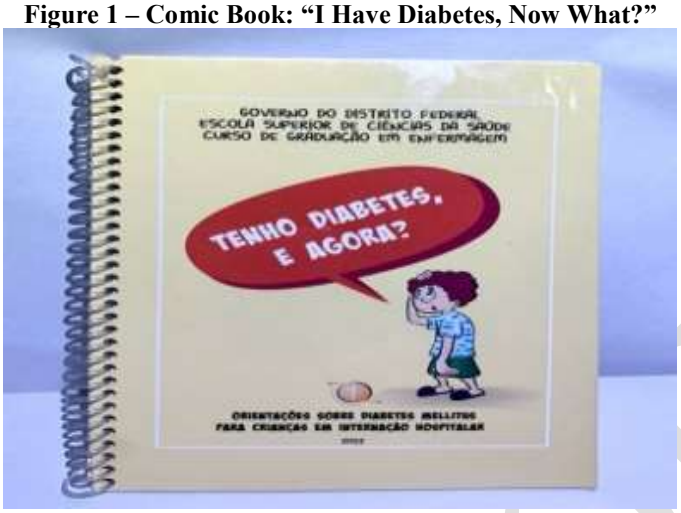
The second stage, involving the planning of actions, was guided by the identification of objectives and the necessary means to achieve them. This process included discussions among the researchers and healthcare professionals involved in hospital management, unit supervision, and staff members working in the pediatric unit. Through these discussions, the proposal to implement a health education session for adolescents was accepted.

Planning among the researchers required preparatory meetings to standardize the approach used during the intervention. Two meetings were conducted, during which the following aspects were defined: welcoming strategies, approaches to adolescents and their family members, the guiding question used to initiate discussion, strategies to promote a relaxed and engaging environment, and the relevance of maintaining a field diary for documenting the activity, among other aspects.

In the third stage, the planned actions were implemented through the health education session. Prior to conducting the session, the researchers reviewed the supporting literature, specifically the Brazilian Diabetes Society Guidelines (2019–2020).[1] The researchers organized their schedules in order to remain with the adolescent–caregiver dyad for as long as necessary and maintained an open approach to gaining insights and reflections during the intervention, thereby contributing to strategies and methods aimed at organizing the process of safe hospital discharge.

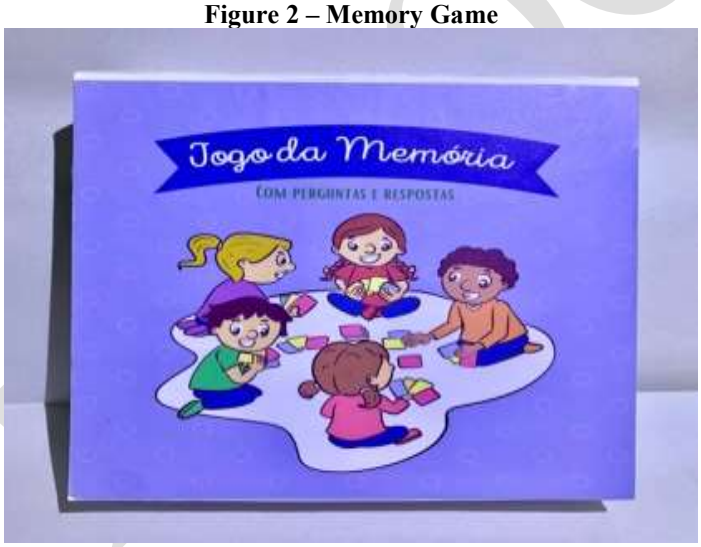
During the session, three technological tools were used: the comic book “I Have Diabetes, Now What?” (Figure 1), available at: https://drive.google.com/file/d/1_m2OSadvJMFlswlcxA5yrMqf83IzPdC5/view?usp=drivesdk; a Memory Game (Figure 2); and the Standard Operating Procedure for the “Pediatric Population and Family Members in the Therapeutic Management of Type 1 Diabetes Mellitus (SOP-DM)”, which had been previously validated by expert judges and the target audience, available at: https://drive.google.com/file/d/1G9-AMDFaq1Z1U-GL-vq-9zHZXgskuBnw/view?usp=drivesdk (Chart 1).

Figure 1 – Comic Book: "I Have Diabetes, Now What?"



Source: https://drive.google.com/file/d/1_m2OSadvJMFlswlcxA5yrMqf83IzPdC5/view?usp=drivesdk

Figure 2 – Memory Game



Source: https://drive.google.com/file/d/1G9-AMDFaq1Z1U-GL-vq-9zHZXgskuBnw/view?usp=drivesdk

Chart 1 – Description of Health Technologies: the Comic Book, the Memory Game, and the Standard Operating Procedure. 2023.

Technologies	Description
Comic Book – "I Have Diabetes, Now What?"	This comic book (CB) was developed after conducting the Integrative Review (IR) and the Situational Diagnosis (SD), from which the relevant aspects for the development of technologies to promote health education were extracted. The IR answered the review question: what information should be included in health technology to promote self-care in the pediatric population with diabetes? In the SD, qualitative research was conducted seeking to understand the daily life of 16 participants diagnosed with T1DM. From the narratives, four thematic categories were identified that supported the identification of relevant aspects for the development of the technology. The CB uses playfulness to facilitate the understanding of T1DM, involving important aspects of daily life that facilitate management, care, and therapy for individuals with T1DM. This technology received the award "Best Field Research" at the II Nursing Congress of the Catholic University of Brasília, held in Brasília in 2019. It was developed between March and October 2019 and updated in 2021. The content validation of the CB technology occurred between November 2020 and March 2021.
Memory Game	The Memory Game is a tool that presents a differential to assist in the health education process, since its objective is to provide understanding of the referred theme and articulate the development of cognitive functions related to health, associating attention, orientation, memory, language, and social cognition. This dynamic occurs when the adolescent turns over two cards; if the images are identical, a question related to the respective image is asked. During the process, it is necessary to enable a welcoming, constructive, and educational environment. Therefore, it is necessary to include family members, allow those involved to clarify their doubts, and encourage them to develop autonomy in care. Developed between January 2021 and September 2022.
Standard Operating Procedure – Pediatric population and family members in the therapeutic management of T1DM (SOP-DM)	Developed with the purpose of supporting the actions of health professionals in the care of the pediatric population with T1DM. After the SOP was elaborated, content validation was carried out by seven expert judges who answered a questionnaire in the Likert format, and for the analysis of the responses the calculation of the CVI and ICC was used. The total CVI value obtained was **1.0**, and regarding the ICC it was **0.525**, which represents moderate agreement among the participants. After the elaboration of the SOP and validation with the judges, the application of this tool occurred with the pediatric population and their family members. Five interviews were conducted, in which strengths and weaknesses were identified during the management and care of the pediatric population with T1DM. It was reinforced that the use of SOP-DM may assist health professionals, especially nurses, in carrying out educational interventions with this population and provide safe hospital discharge, since individual education with the support of technologies presents behavioral change. Developed between October and December 2021. Validation occurred between January and May 2022.
Instructional Therapeutic Play	In the search to understand and apply health education supported by Instructional Therapeutic Play (ITP), a scoping review was developed with the following review question: "What does the scientific literature say about the impact of the use of therapeutic play and play activities in the pediatric unit?". With this study it was identified that ITP and play activities have a positive impact on children's hospitalization and are facilitating tools in the care of children and adolescents hospitalized in pediatric units. This study provided information for the development of the ITP used in this research.

Legend: Type 1 Diabetes Mellitus – T1DM; Situational Diagnosis – SD; Comic Book – CB; Content Validity Index – CVI; Intraclass Correlation Coefficient – ICC; Standard Operating Procedure – SOP; Integrative Literature Review – ILR; Health Technology – HT; SOP-DM – Standard Operating Procedure for Type 1 Diabetes Mellitus.

In the third stage, the health education session began with a brief interview with the adolescent and the family member regarding their interest in participating in the research, as well as information about the objectives of the study and about the researchers. If they agreed to participate, the signing of the consent form was requested from the adolescent and his or her respective family member. Subsequently, the sociodemographic and clinical data were completed, followed by the presentation of the health technology tools and the implementation of the health education session supported by Instructional Therapeutic Play (ITP), with notes recorded in the field diary[14] regarding the guiding question of the study. The session began with the question: How can we contribute to help you carry out your care after receiving hospital discharge? What are your greatest doubts?

In the fourth stage, an evaluation of the activity conducted by the researchers was carried out, with the identification of the expectations of the participant and his or her family member regarding the need for changes in the family's daily life. The evaluation was performed according to the analysis of the participants' narratives.

Data Analysis

After data collection, the narratives and impressions gathered through the field diary during the session were analyzed, and the interpretation of the findings was supported by the normative framework of the Brazilian Diabetes Society Guidelines 2019–2020.[1] Narrative analysis is an important tool for developing and writing action research experiences, since narrative construction and retelling are fundamental practices of human communication.[15]

Ethical Aspects

This study was submitted to the Research Ethics Committee involving Human Beings of the Foundation for Teaching and Research in Health Sciences of the Federal District (CEP/FEPECS). The research was based on Resolution 466/12, which guarantees the transparency of the process and the privacy of the participants. It complied with all national and international standards for research involving human beings.

This study ensured the privacy and confidentiality of those involved, guaranteeing them the right to withdraw from participation at any time without causing any harm of any nature to them. The adolescent signed the assent form, and the consent form was signed by

the legal guardian. The project was approved under opinion no. 5.192.420, CAAE 53246921.4.0000.5553, on January 4, 2022. The study complied with the criteria of the Revised Standards for Quality Improvement Reporting Excellence – SQUIRE 2.0.

RESULTS

The health education session was conducted with the application of three health technology tools: the Comic Book, the Memory Game, and the Standard Operating Procedure (Table 1).

Contribution of technological tools in the pediatric unit

The health education session was carried out using Instructional Therapeutic Play (ITP) (Figure 3). It was decided to implement this technology in the care provided by the health team with the aim of strengthening safe hospital discharge. The session was conducted by the researchers, a nursing resident and a nursing undergraduate student (Table 2).

A field diary was used to document the reflections of the researchers, and at the end of each session an open space was provided so that the participants could clarify any possible doubts. During this period, five children aged between 1 and 4 years and one adolescent with T1DM were hospitalized; however, among the five children, only one met the inclusion criteria.

This action research values the depth of analysis rather than statistical data. In this sense, the decision to conduct the study with only one participant did not compromise the quality of the study, since the adolescent and her guardian were directly involved and committed to the problem to be investigated and to the change to be implemented. Thus, the aim was to deepen the understanding of T1DM focusing on a single experience, thereby testing and refining the investigative process and the interventions before a broader application.

Figure 3- Images of the Therapeutic Play

Source: Personal archive.

Initially, the material necessary for conducting the session was organized. The material consisted of the three technological tools and the necessary supplies, such as a glucometer, test strips for blood glucose, a lancing device with lancets; an EVA doll; insulin syringes, NPH and Regular insulin vial-ampoules, insulin cartridges, permanent and disposable insulin pens, alcohol swabs or cotton balls moistened with 70% liquid alcohol, procedure gloves, the patient's own printed insulin prescription, and a printed model of the glycemia diary.

The location chosen was the adolescent's hospital bed, where a health education session was conducted with the dyad (adolescent and family member). The resident began with the application of the Standard Operating Procedure (SOP), using the EVA doll and the supplies; subsequently, the undergraduate student proceeded with the reading of the comic book and the activity with the Memory Game.

The session was conducted with a 13-year-old adolescent. She was a resident of the Federal District, accompanied by her mother, and attended school. There was receptivity between the participants and the researchers, favoring a welcoming environment. The session began with the sociodemographic and clinical questions, followed by information about the sequence of the session with Instructional Therapeutic Play (ITP), with the adolescent who was accompanied by her mother.

The adolescent reported that she received the diagnosis of T1DM at 11 years of age and, since then, has been followed at the Specialized Center for Diabetes, Obesity, and Hypertension (CEDOH). Thus, it was observed that the adolescent had knowledge and understanding regarding the experience of the disease; however, the mother reported that she did not understand it very well and that her daughter preferred to administer the insulin by herself. At first, the adolescent showed resistance, but soon felt comfortable participating. She demonstrated a level of knowledge very high for her age and appeared to have

acceptance of T1DM; however, her mother presented a hostile behavior toward her daughter, causing discomfort for the adolescent.

As guidance, the theme addressed included how the insulin administration should be performed, the management of the disease, and the therapeutic treatment. Subsequently, the application of the other two educational instruments followed, in order to train the family member in the execution of safe practices for T1DM. In general, the adolescent showed good acceptance of the instruments. Due to the difficulty in the relationship between mother and daughter, referral for therapeutic follow-up of the dyad was necessary.

DISCUSSION

When discussing chronic diseases, adherence to treatment becomes essential for managing situations that will frequently occur in a person's life. In this sense, enabling adolescents to understand the disease, the reactions of their own bodies, and the necessary care directly contributes to good adherence and management of diabetes[16–17]. Upon receiving the diagnosis of a chronic disease, adolescents may experience a series of feelings similar to the grieving process for losses resulting from the disease, which may include stages such as denial, fear, anger, and sadness, among others[18–19].

Health education can contribute significantly to the management of chronic diseases. Through it, it is possible to improve treatment adherence and prevent complications. Continuous encouragement is necessary for individuals to develop and maintain the self-care practices required. Health education must be carried out according to the individual's level of understanding, adapting it to the appropriate age group and using suitable methodologies[1–2].

The playful nature of this educational dynamic promotes care and health education for adolescents with Type 1 Diabetes (T1D)[4]. Caring for people, which is the central focus of healthcare practice, is a complex task and therefore requires effective qualification. At the international level, there is a growing movement regarding the safety and quality of healthcare assistance[6]. The development of protocols, guidelines, manuals, and standards is important in this context, considering their extensive citation in official communications related to service quality[1–2].

The use of playful strategies allows for therapeutic communication based not only on understanding the user's speech but also the emotions underlying it. In addition to using this resource, it is necessary to minimize the use of difficult terminology and to pay attention to adolescents' feelings so as not to diminish or exaggerate them, which could prevent new meanings from being attributed or hinder the understanding of their desires[17]. Playful tools are among the national and international recommendations for the education of children and adolescents with diabetes[20]. Furthermore, the Therapeutic Instructional Toy (TIT) supports professionals by enabling communication that is appropriate for the target age group.

Preparation for safe discharge has been outlined as an important method to improve the quality of care and reduce the risk of complications after hospital admission. It is recommended that this process begin early, using an interprofessional approach in which the patient and their family are included in decisions regarding care, as well as assigning a coordinator to facilitate the systematization of care and the transfer of information between different levels of healthcare[18–20]. Correspondingly, a literature review conducted in 2021 states that discharge planning, which involves creating a personalized plan for the patient before leaving the hospital and transitioning home, together with additional post-discharge support, can reduce unplanned hospital readmissions[20].

The treatment of T1D is specific and detailed; therefore, it must be monitored by the parents of children and adolescents. Caregivers must acquire knowledge, skills, and competencies in diabetes care, since parents' adaptation helps with the acceptance of the diagnosis and continuity of treatment. Over time, it is expected that children and adolescents will assist in their own treatment and develop autonomy, and caregivers who have more information can help with this therapeutic management[19]. In this sense, planning educational actions aimed at teaching self-management skills is a continuous process. Similarly, the present study promotes the development of skills both for the adolescent and their family member by using health technology as an educational mechanism, thereby promoting better acceptance, understanding, self-management, and self-confidence.

The use of health technology can contribute to reducing the risk of acute complications, such as severe hypoglycemia and diabetic ketoacidosis, as well as long-term complications in both macrovascular and microvascular contexts. Additionally, diabetes-related technology may have a positive impact on psychosocial health by reducing the

burden associated with the disease. However, treatment goals for diabetes are often not achieved, and individuals with T1D frequently face acute and chronic complications resulting from this condition, as well as psychosocial outcomes below the ideal level[19].

Thus, this study highlights the importance of technology in providing health education to adolescents with T1D and to their families/caregivers. By using a playful approach, this technology seeks to promote and facilitate understanding, becoming a resource that brings the adolescent closer to their lived reality, stimulating their interest and promoting learning about the subject, thereby preventing both chronic and acute complications of the disease.

Similarly, it can be observed that the use of the Therapeutic Instructional Toy (TIT) enables adolescents to better understand procedures and their stay in the hospital environment, which may otherwise generate fear. In this context, health planning for safe discharge through educational sessions—using TIT along with the Standard Operating Procedure (SOP), the memory game, and the comic book—demonstrates that the more information adolescents receive about what will happen, the less fear they will experience. The use of TIT helps adolescents understand this reality and allows them to experience the procedure in a more expressive way.

In this context, relevant benefits in the pediatric hospital environment can be observed with the application of therapeutic play, including reduced postoperative pain, improved patient behavior and attitudes, and decreased anxiety during hospitalization[21]. This set of data suggests that, when applied appropriately, play therapy can favor the emotional preparation of adolescents for discharge, improving their adaptation to returning home or to their normal routine[22].

Hospital playful interventions, including patient education, are widely used and have positive effects across various age groups, reinforcing their applicability in diverse contexts[21]. Playful interventions can be cited in four clinical contexts, including patient education and adaptation to the hospital environment[22]. These interventions have proven effective in reducing pain, stress, and anxiety[22].

Study Limitation

The results presented correspond to only one educational intervention, which allowed the investigative process and the interventions to be tested and refined before a broader application. The approach prioritized a deep understanding of the phenomenon and the experimentation of a transformative action on a reduced scale, which is compatible with the qualitative and interventionist nature of action research. Thus, the choice of a single subject allowed close, continuous, and reflective monitoring of the stages of planning, action, and evaluation.

There is a need for longitudinal studies that include a larger number of participants over a longer period of time, involving different sessions, in order to verify more expressive results related to the use of the instrument in children and adolescents with Type 1 Diabetes (T1D), as well as the development of studies that may create tools to evaluate the usability of these health education technologies.

Although the study presents these limitations, it does not exhaust all possibilities of themes to be explored. It is considered that the contents addressed have the potential to generate change and may also be replicated in schools, companies, and health services, especially within the community through the Family Health Strategy (FHS).

Contribution of the Study

Type 1 Diabetes Mellitus (T1DM), as a chronic disease, implies several changes in the life of the adolescent and their family. Therefore, the tools used are presented as care strategies that allow the adolescent to express their feelings, in addition to serving as tools that enable the teaching of procedures in a playful and safe manner, contributing to the action–reflection process of this self-care. The relevance and contribution of the study lie in the indication that diabetes-related technology, through health education, using instruments related to therapeutic play and operational protocols, has the potential to improve clinical care and psychosocial support, enhance quality of life, and thus promote safe, effective, and high-quality hospital discharge.

The study was applied to a hospitalized adolescent at a moment preceding hospital discharge; however, the activity developed demonstrated potential for application to any age group, as well as in the health education of users assisted in primary health care. The Health

Secretariat of the Federal District (SES-DF) has a Diabetes Mellitus Management Protocol directed only to the adult population. Therefore, the main contribution of this study is to present the developed and validated Standard Operating Procedure (SOP) aimed at the care of the pediatric population, not only within the public health network but also in the private sector.

After conducting the health education session, discussions were held with health professionals in order to present how the session occurred and the proposal for implementing this format of health education within this service. The benefits of using therapeutic play in care are well recognized, whether with adults or the pediatric population, such as improved adherence to treatment and increased family satisfaction with the care provided, among other benefits. However, the challenges of implementation within the Brazilian Unified Health System (SUS) are also acknowledged, particularly due to the lack of trained professionals, limited infrastructure, and insufficient managerial support.

CONCLUSION

The purpose of the study was achieved by contributing, through health education, to a safe discharge for the adolescent diagnosed with Diabetes Mellitus. It was observed that the adolescent was able to express feelings, doubts, distress, and fear related to diabetes. Furthermore, with the possibility of handling invasive procedures using the doll, the adolescent was able to become familiar with the equipment and practice the procedures inherent to the treatment of Type 1 Diabetes Mellitus (T1DM).

The study demonstrated that therapeutic play has applicability for implementation in universal health services, representing a strategy aligned with the principles proposed in legislation and in the guidelines of the Convention on the Rights of the Child (UN), particularly regarding the humanization of care for the pediatric population. When properly implemented, it may contribute to improving the quality of pediatric care.

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Author Contributions	
Luciangela Vasconcelos da Silva:	Formal analysis, Investigation, Methodology, Validation, Writing – original draft, Writing – review & editing.
Bruna da Silva Cardoso:	Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Supervision, Validation, Writing – original draft, Writing – review & editing.
Flávia Avancini Ferreira:	Conceptualization, Data curation, Investigation, Methodology, Project administration, Supervision, Validation, Writing – original draft.
Ana Christiane Soares de Oliveira:	Formal analysis, Investigation, Methodology, Validation, Writing – original draft.
Luz Marina Alfonso Dutra:	Formal analysis, Investigation, Methodology, Validation, Writing – original draft.
Manuela Costa Melo:	Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Supervision, Validation, Writing – original draft, Writing – review & editing.
All authors approved the final version of the manuscript.	

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Corresponding author: Luciangela Vasconcelos da Silva
Escola Superior de Ciências da Saúde (ESCS)
SMHN 03 - conjunto A - bloco 1 - Edifício FEPECS
Brasília/DF, Brazil. CEP: 70701-907
luciangelavasconselos@gmail.com