



Therapeutic toy for children with Type I Diabetes Mellitus: Home interventions

Brinquedo terapêutico para crianças com Diabetes Mellitus tipo I: intervenções no domicílio

Juguete terapéutico para niños con Diabetes Mellitus tipo I: intervenciones en el hogar

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ABSTRACT

Objective: To describe the use of therapeutic toys in home care for children with type 1 Diabetes Mellitus. **Method:** A qualitative case study carried out with children diagnosed with type 1 Diabetes mellitus, residents in the inland of Paraná. Data was collected in 2018, through interviews with mothers, therapeutic play sessions with children and notes in the field diary. Data analysis was performed following the precepts of content analysis. **Results:** The children simulated everyday situations with the therapeutic toy naturally, showing that the care measures with blood glucose and insulin application are part of the routine. However, they show signs of dissatisfaction with their own health, drawing comparisons with children who do not suffer from the disease and demonstrating their distress when subjected to painful procedures. **Conclusion:** The use of therapeutic toys allowed for the opening of an effective communication channel between children and professionals, enabling the researcher to understand the children's perception of their health condition, and to develop guidelines and targeted care measures. **Implications for the practice:** When using the therapeutic toy, a resource for intervention in Nursing care, as a care technology, the possibilities for pediatric Nursing work are expanded, helping children in chronic conditions.

Keywords: Diabetes Mellitus, Type 1; Play and Playthings; Case Reports; Child Care; Pediatric Nursing.

RESUMO

Objetivo: Descrever o uso do brinquedo terapêutico no cuidado domiciliar de crianças com *Diabetes Mellitus* tipo 1. **Método:** Estudo qualitativo do tipo Estudo de Caso, realizado com crianças com diagnóstico de *Diabetes Mellitus* tipo 1, residentes no interior do Paraná. Os dados foram coletados em 2018, por meio de entrevista com as mães, sessões de brinquedo terapêutico com as crianças e anotações no diário de campo. A análise dos dados foi realizada seguindo os preceitos da análise de conteúdo. **Resultados:** As crianças simularam situações cotidianas com o brinquedo terapêutico com naturalidade, evidenciando que cuidados com a glicemia e aplicação da insulina fazem parte da rotina. Contudo, demonstram sinais de insatisfação com a própria saúde, traçando comparações com crianças que não apresentam a doença e demonstrando suas angústias quando submetidas a procedimentos dolorosos. **Conclusão:** A utilização do brinquedo terapêutico permitiu a abertura de um canal efetivo de comunicação entre criança e profissional, possibilitando ao pesquisador compreender a percepção das crianças sobre sua condição de saúde e desenvolver orientações e cuidados direcionados. **Implicações para a prática:** Ao utilizar o brinquedo terapêutico, recurso de intervenção na assistência de enfermagem, como tecnologia de cuidado, amplia-se as possibilidades de atuação da enfermagem pediátrica, auxiliando crianças em condições crônicas.

Palavras-chave: Diabetes Mellitus tipo 1; Jogos e Brinquedos; Relatos de casos; Cuidado da criança; Enfermagem pediátrica.

RESUMEN

Objetivo: Describir el uso de juguetes terapéuticos en el cuidado domiciliario de niños con Diabetes Mellitus tipo 1. **Método:** Estudio de casos cualitativo realizado con niños diagnosticados de Diabetes Mellitus tipo 1, residentes en el interior de Paraná. Los datos fueron recolectados en 2018, a través de entrevistas con madres, sesiones de juego terapéutico con niños y notas en el diario de campo. El análisis de datos se realizó siguiendo los preceptos del análisis de contenido. **Resultados:** Los niños simularon situaciones cotidianas con el juguete terapéutico en forma natural, demostrando que los cuidados con la aplicación de glucosa e insulina son parte de su rutina. Sin embargo, muestran signos de insatisfacción con su propia salud, haciendo comparaciones con niños que no padecen la enfermedad y demostrando su angustia al ser sometidos a procedimientos dolorosos. **Conclusión:** El uso de juguetes terapéuticos permitió la apertura de un canal de comunicación eficaz entre los niños y los profesionales, posibilitando al investigador comprender la percepción de los niños sobre su estado de salud, y desarrollar orientaciones y cuidados focalizados. **Implicaciones para la práctica:** Al utilizar el juguete terapéutico, recurso de intervención en el cuidado de Enfermería, como tecnología asistencial, se amplían las posibilidades del trabajo de Enfermería Pediátrica y se presta ayuda a los niños en condiciones crónicas.

Palabras clave: Diabetes Mellitus Tipo 1; Juego e Implementos de Juego; Informes de Casos; Cuidado del Niño; Enfermería Pediátrica.

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INTRODUCTION

Type 1 *Diabetes Mellitus* (DM1), one of the chronic diseases that most affects children and adolescents, has shown an increase in its incidence worldwide.¹ DM1 often develops in children who do not have necessary cognitive skills and emotional maturity that allow them to plan and make decisions about their therapeutic regimen adjustments.^{1,2}

When it occurs in childhood, it has great repercussions on family life and on the child's growth and development. Chronic childhood illness can trigger several family conflicts when diagnosed, such as abandoning employment, causing financial imbalance; reduction or interruption of leisure time; overload of the primary caregiver; and family breakdown with negative repercussions for the entire family.^{3,4}

It is a difficult-to-control disease, prone to several acute and chronic complications. Therefore, after diagnostic confirmation, it is necessary to incorporate a rigid and permanent treatment in order to establish an adequate diet, controlled practice of physical activity and insulin therapy.⁵ Restricted access to medication, neglect in glucose monitoring, and an unhealthy lifestyle can lead to death.¹

It is noteworthy that the changes in the child's life are particularly uncomfortable and continuous, given that the treatment involves dietary restrictions, multiple insulin injections, the need for regular physical activity and, also, the fear of possible complications and malaise caused by the symptoms of hyper and hypoglycemia.⁶

The integrated partnership between health professionals and people living with diabetes must protect the health and well-being of all patients and their families.¹ The multi-professional team should encourage the child to treat diabetes and include their families, so that they can accompany and encourage their children to maintain their care.⁷

Games and toys can function as a therapeutic aid in this context, and appear as a way of immersing health professionals in the universe of care for children with DM1, in which, through a child's natural activity, they are led to express their feelings and anxieties regarding their health condition and to relieve the tension that their reality imposes on them.⁸

Playing should be considered by nurses as the most appropriate way to approach the child, capable of developing empathy between them, of seeing and understanding the world through the child's eyes and of establishing bonds between nurses, children and family.

Many studies have shown the use of the Therapeutic Toy (TT) with children in a hospital environment, in preparation for painful procedures and surgeries.⁹⁻¹⁰ However, studies on TT application with DM1 in the home environment are scarce.

TT can be classified into: dramatic, when its purpose is to allow the children to externalize the experiences they have difficulty verbalizing; enabler of physiological functions, used in the phase of physical rehabilitation of physiological functions depending on the children's new life condition; and instructional, when it aims to prepare the children for therapeutic procedures.¹¹

Given such considerations, the importance of carrying out studies that use TT as a care technology in coping with DM1 by children in the home environment translates into advancing the investigative approach to this condition, in addition to the decompensation periods of the disease. Therefore, the objective was to describe the implementation of the therapeutic toy in home care for children with Type 1 *Diabetes Mellitus*.

METHOD

The methodological trajectory for this study was based on the qualitative approach, in the case study modality, which consists of collecting and analyzing information about a certain individual, a family, a group or a community, in order to study diverse aspects of their life, according to the research subject matter. It is understood as a research category whose object is to study a unit in depth.¹²

The study was anchored in the available literature on the care with DM1, considering that the use of theory in case study research suggests the use of something that supports it, which can be constructed by the own researcher, from a literature review or by the construction of theoretical proposals that guide him/her in the development of the study.¹³

The study was carried out in households with children diagnosed with DM1 at least three months ago and who lived in municipalities belonging to a Health Regional in the state of Paraná, comprising 25 municipalities. The expansion of the study coverage area to the municipalities belonging to the Health Regional, and not only to the researcher's home municipality and surrounding cities, was due to the difficulty in attracting children who met the study eligibility criteria in this delimited area. This aspect can denote the deficiency in the data record of this clientele, and that are not included in the official statistics and records of the public health services.

Thus, in order to attract the participants, first contact was established with the Pediatric Endocrinology Outpatient Service of reference for the care of children with DM1, belonging to the health regional, the names of the children who were of the correct age for inclusion in the study being provided by the professionals. In possession of the children's data and information about the municipalities of origin, the researchers contacted the nurses of the reference BHUs for each child, via telephone or by text messages, in order to confirm such information and to establish contact with the families.

To delimit the inclusion of the children in the study, it was defined that they should be registered in a BHU in cities belonging to the health regional defined by the study, belong to the age group of between two and six years old, and having been diagnosed the disease over three months ago.

It is worth mentioning that, within this age range proposed in the study, children are already beginning to have the ability to develop a sense of skillfulness and autonomy, evolving towards the development of autonomy and initiative in activities,¹⁴ thus being able to develop the activities proposed by the researcher.

The literature on diabetes maintains that,¹⁵ for patients with recent diagnosis and their caregivers, education about the disease and its initial learning must occur from the moment of diagnosis and admission at the health institution until hospital discharge, recommending a subsequent consultation with the inter-professional team, within one month after discharge. In addition, professional monitoring should be an ongoing process throughout life.

The inclusion of the study participants with a diagnosis for at least three months sought to select individuals with knowledge about DM1 care, and who had previously been instructed by competent health professionals to conduct the care measures. Thus, it was considered for this selection that, after this period of living with the disease, the children in the study, who were diagnosed and remained hospitalized for a few days, and their caregivers had the opportunity to receive guidelines on care with DM1 and develop them at their homes.

The exclusion criterion included children who were in a hospital environment or experiencing a situation of significant glycemic decompensation.

Thus, of the five selected children, three were recruited who fully met the established eligibility criteria, and who proved to be suitable for the research, according to the method defined by the author. Altogether, six individuals participated in the study, three children and their mothers.

This choice occurred because it is a collective case study, in which the researcher does not focus on a single case to investigate a phenomenon, extending his study instrument to several cases, believing that the study will allow for a better understanding of an even greater number of cases. Thus, it is possible to establish the scope of the results in other contexts, depending on the characteristics of the selected cases.¹³

The first contact with the families was via cell phone, for which there was an agreement to participate in the research and the first visit was scheduled, according to the participants' availability. The meetings for data collection took place from July to October 2018, totaling three visits with each of the children and their respective mothers.

Data collection took place by using a semi-structured interview script, formulated by the researcher herself, by using the TT and by recording the activities in a field diary.

Through a semi-structured interview with the mothers, it was sought to characterize the environment, the context of the illness, and the experience of the family and the child regarding DM1 diagnosis. Information such as the following were surveyed: child's age and gender; parents' age, schooling and occupation; existence of a primary caregiver for the child, their age and relationship or bond with the child; approximate family income; whether the SUS was fully utilized, a private health plan or underwent private monitoring; type of delivery; presence of complications in the gestational period; birth weight and height; Apgar score and data on breastfeeding and immunizations.

Information on how the child's DM1 diagnosis occurred, previous knowledge about the disease, guidelines received

from the health professionals to care for the disease, outpatient follow-up, and family history of diabetes were also investigated.

Although the aforementioned additional information was collected by the researcher, in order to support the research, these data will not be described here because they are not the object of the present study.

The interventions with the children occurred through the TT application. To this end, prior to and throughout the implementation of the study, the researcher underwent meetings and training with the research group, having been accompanied at a distance by a PhD student with extensive experience in approaching the use of therapeutic toys with children with diabetes. In addition, all the ethical and operational care measures recommended for the application of the TT were strictly observed, with each mother-child binomial being welcomed in the first meeting, dialogical evaluations at each meeting, as well as respecting the individual pace and availability of each participant. Such care measures resulted in the consolidation of a very positive bond between researcher and participants, and in the effective participation of each one of those involved.

To carry out the activities, objects were made available that considered the child's past history of treatment and hospitalization. Material used for hospital services was used, such as a serum bottle, equipment, distilled water, Foley tube, gastric tube, gauze packs, procedure gloves, protective glasses, mask and surgical cap, bandage, test collection tube, insulin vials, syringes, needles, applicator pens, lancets, blood glucose tape, glucometer, cotton and 70% alcohol.

In addition to the materials used in the hospital area and the proper supplies for diabetes care, other types of toys were offered to the child, aiming to cover other care measures such as food and physical exercises, which are also pillars of the care for DM1.¹⁵ Thus, instruments were offered to enable the children to dramatize their experience with the disease and express their feelings, expressing themselves freely on the subject matter. Among the materials were a kit consisting of paper, glue, ballpoint pens and colored pencils; rag dolls representing the family, nurse and physician; assembling blocks and toys that would refer the child to the domestic routine, such as food, kitchen tools and physical activity.

During the application of the TT, the researcher simultaneously carried out the observation of the child's responses and symbolic manifestations, with subsequent recording of all the information in a field diary. The home use of the TT allowed the researcher to approach the research participants in their own environments, in order to obtain information on the spontaneous occurrence of the fact. The field diary record, filled out at each visit, made it possible to organize the activity following the planning stages, checking the actions implemented and the results achieved.

Through the use of the field diary, the researcher seeks to assimilate details that, when compiled, bring together the different moments of the research. Its use demands a systematic use that extends from the first moment of going to the field until the end of the research.¹⁶

The use of the TT was anchored in the “*Cuidar Brinquedo*” (“Toy Caring”) Nursing Care Model, which proposes its use as a care technology, immersing it in the world of the children, knowing their reality and using games as a form of therapy, theoretically and methodologically grounded. This model is structured in stages: Welcoming, with the purpose of establishing a bond between child and nurse; Playing, in which there is a more direct interaction between the nurse and the child and the children’s universe, allowing for the perception of the difficulties presented in care; Coming to an end, effectively related to a situation of resolution of deficits or perception of the need for referral to other professionals. The sessions related to this care model can be single or multiple.¹⁷

In the first meeting with the participants, guidelines on the study were provided, the Free and Informed Consent Form was presented and the interview with the mothers was carried out. For the children, the materials and toys that would later be used in the interventions were exposed, so that they would become familiar with the objects.

In the second meeting, sessions were held with the Dramatic Therapeutic Toy (DTT) in order to understand the children’s experience with DM1 and to identify the main Nursing problems, to later develop an individual care plan. Each session lasted a mean of 30 minutes.

The DTT session started with the following guiding question: “Shall we play with a child who has diabetes?”, adopting the following sequence: 1 - The child was invited to play with the researcher, respecting his/her refusal; 2 - The child received information about the approximate duration of the game and that the toys would be returned at the end of the session; 3 - The toys were offered without identification, allowing the child to play freely; 4 - The game was not interrupted, directed or streamlined; 5 - The researcher participated as requested by the child, who sought to deepen the discussion about the verbalized feelings or expressions presented by the child; 6 - The sessions were audio-recorded and the observations were recorded in a field diary by the researcher after the end of the session; 7 - When the session time was close to completion, the child was warned so he/she could finish the game.

Data was analyzed concurrently with collection, considering the children’s statements and their attitudes and expressions, described in the field diary.

Data analysis followed the stages of qualitative content analysis in its conventional modality, used to describe and promote knowledge and understanding about a certain phenomenon whose literature is scarce, and the coding of categories derives directly from the data, without obligation to prove previous studies.¹¹

The analysis follows three steps: the first consists of a careful reading of the content from the collection of data and transcriptions for later codification; in the second, coding is performed by identifying words, phrases, themes or concepts that persist in the data and stand out as revealing the phenomenon studied; and in the third step categorization occurs: each code is taken up, reread, separated and classified into groups, according to

the similarity of conceptual characteristics, determining the thematic categories.¹⁸

The study followed the recommendations established by Resolution No. 466 of December 12th, 2012, and was approved by the Ethics Committee in Research with Human Beings of the State University of Maringá under opinion No. 2,682,522 and CAAE No. 89210418.5.0000.0104 in May 2018. The family members of the children who participated in the study signed the free and informed consent form for minors in two counterparts.

RESULTS

The study sample consisted of three children, who were between 2 and 4 years old. To preserve the identification of the participating children, references to superheroes and heroines from comic books were used, in analogy to the immense challenges faced by these small patients in the daily life of the chronic disease. Data will be firstly exposed in order to characterize the participants and then the category identified after analysis of the reports and meetings.

It is worth mentioning that, although the study interventions with the use of the TT were carried out with the children, the mothers remained at all times as support for the researcher, since they were the primary caregivers for the children.

“Spider-Man” was five years old at the time of the research, a first-grade elementary school pupil, second child of currently-separated parents, and living with his mother. The father has high school education and is currently unemployed, and the mother is a beautician. The family monthly income is approximately two minimum wages.

At the age of three, given the symptoms of polydipsia, polyuria and significant weight loss, he was taken to a medical consultation. In that first visit, antibiotics for tonsillitis were prescribed and, due to the lack of DM1 diagnosis and the absence of guidelines on hyperglycemia, the symptoms worsened, leading the child to the state of diabetic ketoacidosis (DKA). When he was taken to an Emergency Service (ES) and with glycemic monitoring, the diagnosis of DM1 was made, and he was referred to the Intensive Care Unit (ICU).

During the ICU stay, the mother was instructed on how to care for the disease and received the necessary referrals for outpatient follow-up with an endocrinologist, a nutritionist and a psychologist. The mother was also referred to the Diabetics Association in the city of São Paulo (ADJ Diabetes), where she received inputs and the main instructions for the care of the child. Currently, Spider-Man lives with his mother and sister.

In his routine, capillary glycaemia is performed several times a day, as well as the administration of Neutral Protager Hagerdorn (NPH) insulin and Regular insulin, using a syringe and a needle. Recently, he started to be followed-up in the private network, through a health plan, offered by his paternal grandmother. For still being in the grace period of the plan, when necessary, he uses outpatient care by the Unified Health System (*Sistema Único de Saúde*, SUS).

The food regimen was oriented at the time of diagnosis and the mother makes adjustments, when she deems it necessary,

seeking help on the Internet. He consumes whole and dietary foods; however, he also eats the normal family diet. The child had two hospitalizations, in addition to the time of diagnosis, one due to tonsillitis and, as a medical precaution, remained hospitalized for observation; and the second, due to seizures resulting from hypoglycemia.

The second child, called Princess Anna, was two years old and attended early childhood education at a private school and lived with her parents, who have completed high school. The mother left work due to the daughter's diagnosis and the father worked as a self-employed person, having a family income of approximately five minimum wages.

The child was diagnosed three months before the development of the research, when she started to show polydipsia, polyuria (it was already unfurled and returned to use), associated with polyphagia. At first, because she was using corticosteroids for the treatment of asthma, the symptoms were associated, by the mother, with the drug used. Due to the persistence and worsening of the symptoms, the child was taken to the medical service and advised by the professional that the symptoms were normal for the age and that there was no reason for concern. After the medical consultation, the mother, not satisfied with the diagnosis, was alerted by the nurse that it could be DM1; however, she remained without the medical diagnosis.

Not showing any improvement in her condition, the child was taken the next day to a Basic Health Unit (BHU) where she underwent an examination of capillary glycemic monitoring, on an empty stomach, in which a glycaemia value above the expected normal for her age was found, receiving the diagnosis and being referred for specialized treatment.

The child remained in the ICU for observation and, subsequently, referred to the pediatric ward until the DKA condition has stabilized. During hospitalization, the mother received the main guidelines on the care measures for DM1. At first, regular and NPH insulins were used, applied by syringe and needle and, later, the use of ultra-fast and long-acting insulin analogs was started, with the use of an application pen.

The care measures related to the disease were the mother's full responsibility. The child used insulin three to four times a day, as well as an external adhesive sensor (Libre) to check blood glucose, which largely eliminates the need for the traditional invasive procedure. The child does not make use of the public health system, and her disease is monitored by private means.

The child had glycemic rates with little variations for her age. The food menu was organized with the help of an endocrinologist and followed strictly by the mother, who was very interested in caring for her daughter, in addition to seeking alternatives to help improve her quality of life.

The third participating child, called "Hulk", was four years old, an only child, lived with his parents, and attended public early childhood education. The parents had completed high school, the father worked as a bricklayer and the mother was a housewife, with a monthly family income of approximately two minimum wages.

The diagnosis was made in August 2018, when the child began to show polydipsia, polyuria, and lethargy and started to complain of abdominal pain. The mother says that she was warned by relatives of the possibility that the symptoms could be characteristic for DM1; however, abdominal pain led the mother to seek medical attention in the city ES.

At the consultation, given the result of capillary glycemic monitoring, DM1 diagnosis was established. The child was referred to a secondary health service and remained hospitalized in a pediatric ward for nearly a week, where care procedures such as insulin applications and blood glucose monitoring were started.

During hospitalization, the mother received the first instructions on the child's disease, such as insulin administration and glycemic monitoring, among others. Hulk was discharged using ultra-fast and long-acting insulin analogues, by using an application pen.

After hospitalization, he started immediate outpatient follow-up with a pediatric endocrinologist, receiving the inputs for the care of DM1 through the SUS and guidelines on diet. Home care was shared between Hulk's mother and grandmother, although insulin was administered exclusively by the mother.

Insulin was administered three to four times a day, as well as capillary blood glucose control. Food was also controlled by the mother, who, since the diagnosis, tried to purchase foods that would help in glycemic control, although other foods were also consumed by the family members.

In the process of selecting the characters that would represent them, the children were free to choose the ones that most pleased them, as well as the dolls that would represent their families and/or their caregivers.

At this point in the study, the following question was raised by the researcher: Shall we play with a child who has diabetes?

When presenting the toy box, the children were encouraged to first remove the item that most caught their attention.

The reports and observations from these moments were grouped into a single category called "Living with DM1 in childhood: A daily challenge", which includes food care, routines of care with the disease and its impact on living in society.

Living with DM1 in childhood: A daily challenge

In front of the toys showed to the children, at first, they all removed fruits and legumes from the box, in addition to kitchen objects, such as pots. As they manipulated the objects, they named and simulated the act of eating with them:

I really like bananas, but I can only eat a small piece. I love eggs too. The candies and cookies, Mom doesn't let me eat. But I don't know why she doesn't let [...] (Princess Anna).

I can eat bananas, apples, watermelons, oranges, I can eat anything. I can eat chocolate too, but before I couldn't because I was hospitalized on serum (manipulates the serum equipment). But if I eat too much, I feel bad, I'm terrible (Hulk).

Subsequently, they also became interested in handling materials for hospital use, such as IV equipment, syringes, procedure gloves, glucometer, blood glucose test tape, cotton balls and insulin pens, since they recognized these objects in their care routine.

In addition to his character and those of his family, Hulk took a doll that represented the nurse, which was identified by her white clothes. The child described that whenever the mother woke up, she checked his blood sugar, demonstrating this procedure with the dolls. He played with the glucometer and sometimes forgot to put the tape on, returning later and performing the activity properly. With a needle, he pierced the doll's finger, demonstrating how to put the blood in the glucometer and then using the insulin syringe, demonstrating the application in the gluteal region of the doll:

I don't cry, I don't feel anything (Hulk).

The child played with the dolls that represented him and the nurse. He manipulated the glucometer naturally and explained how the mother performed her glycemic control and then manipulated the insulin pen and demonstrated its application on the doll:

First, she takes this ribbon and puts it here (glucometer), then punctures my little finger, puts it here in the device and sees if I need insulin. Then, if necessary, she'll do it on me (Hulk).

Mom, after pricking my little finger, takes this pen and tells me how much insulin I have to take. Then she comes here (shows the gluteal region on the doll), and applies. I don't cry, I don't feel anything (Hulk).

Princess Anna indicated that the researcher was the doll who was dressed in white (nurse) and took the glucometer in her hand, reporting that we were going to do the blood glucose test.

With the doll in her hands, she looked for cotton and alcohol for antiseptis. She passed the cotton on the doll's little finger, put the tape on the device and checked the blood glucose. Then, I performed the same procedure on the other dolls: mother, father, grandmother and nurse.

When asked who performed the procedures, she replied that it was the mother.

This little thing "pokes" the little finger of the princess, and it hurts a lot. It's mommy doing it on me. I don't cry, but it hurts. Then I do the insulin and eat a fruit if I need, but only a small piece (Princess Anna).

The child explained that she had to eat a fruit in order not to be sick. She used the drip kit to put it in the puppet's cubicle, which for him represented his father, saying he was sick because he had diabetes.

Spider-Man started to play with his character and also with the others he found in the box. During the game, he remembered

that he needed to medicate his doll and highlighted the discomfort he felt with having diabetes, emphasizing the difficulty in not being able to eat everything he would like, like candy, for example.

He demonstrated in the doll the application places of insulin, referring that hematomas appeared in some application sites. He also represented glycemic monitoring in the fingers of the doll's hand, allowing the researcher to perform the care, suggesting the gluteal region of the doll, refusing the option given by the researcher to be carried out on the doll's arm. In this way, the child expresses his perception about the place of his preference, stating that he felt pain in the arm. During the game, the child also asserted that, among his school friends, only he had the disease.

The daily routine regarding blood glucose monitoring and insulin application was reported with some tranquility, denoting a feeling of acceptance, even though he recognizes that it is something not common to other children of his age:

[...] it doesn't hurt at all, I get 60 thousand punctures in the day, I'm very sensitive, but I don't cry, I don't sleep, I'm different (Spider-Man).

It can be seen from the reports that the children reproduced everyday situations in the TT when living with DM1 very naturally, as if care in relation to blood glucose and insulin application were already part of their routine. At the same time, during this routine reproduction, the children mentioned criticisms on their condition, drawing comparisons with other children.

I hate having diabetes, because I can't eat anything, I can't eat sweets, just crackers. At school, nobody has diabetes. Where mommy applies the insulin it becomes purple (Spider-Man).

Although at times the children showed an attitude of normality in the experience with diabetes and that the procedures to which they needed to be subjected started to be incorporated naturally into their life routine, their difficulty in adapting was explained in the games.

They demonstrated the perception of difference in their condition in relation to other children when, eventually, they needed to be separated from their peers for some procedure related to diabetes care, failing to participate, for example, in a game at school. Thus, the times of intervals in the patios or of collective meals were portrayed, with the isolation of the dolls that represented them, sometimes being subjected to a blood glucose control puncture, sometimes in company and under the supervision of an adult from the school, aiming at no consumption of "forbidden" foods.

The body marks and scars due to the invasive therapy such as hematomas, lipodystrophies, bleeding and lesions in the digital pulps, possibly related to multiple punctures for monitoring blood glucose and inadequate rotation, were strongly portrayed during the children's games with the dolls. These elements were manifested by the children when placing dressings on the puncture

sites, or when demarcating these regions (regions of the hands/ fingers, legs and abdomen) with red pens.

DISCUSSION

From the knowledge on the daily life and the daily challenges faced by children diagnosed with DM1 in the face of glycemic control procedures, it was possible to observe their habits, hesitations and feelings regarding the chronicity of the disease. In this sense, it is essential that nurses seek the best form of communication with this target population in order to understand and discuss the best way to face the disease and its treatment.⁸

Therapeutic play, in this perspective, is an essential communication tool for Nursing professionals, as it allows understanding the reality experienced by the child and provides a playful way to teach and readjust glycemic verification and control practices, in addition to encouraging coping with the disease. This tool also provides the opportunity to clarify doubts and curiosities, minimizing fears and assimilating the inevitability of carrying out these procedures.⁸

The children in the study, as well as their families, although they share common experiences in facing DM1, have family arrangements, social conditions and aspects that need to be considered. The demands revealed by the children with DM1 and their families are always unique and require individualized care, respecting the time of acceptance of the chronic condition and adaptation of the family. However, it should be noted that the experience with DM1 is not a constant, varying throughout life, directly influenced by the child's physical and emotional state and developmental stage.¹⁹

Thus, although there is an acceptance of the reality of living with diabetes, seeking a condition of "almost normality", there are times when the negative aspects of the disease and treatment gain prominence, causing sadness, due to the need for constant care in relation to everything that is experienced, such as food adequacy, living with pain and with the limitations imposed in several everyday situations.²⁰

Isolation attitudes are often observed in children and adolescents with DM1, which can lead them to develop low self-esteem, sometimes compromising their development, given the importance of socialization in all phases of childhood, as a stimulus to physical and psychological maturity.

A number of studies point out that children with DM1 can have a higher incidence of depression, anxiety, psychological distress and eating disorders than their peers who are not affected by the disease. This is because both the disease itself and its treatment can exceed the child's emotional resources to deal with the demands imposed by the illness.^{21,22}

Until a certain degree of maturity is reached, which is around 8-11 years old, essential care for children with DM1 is under the responsibility of an adult.¹⁴ To maintain the stability of the glycemic levels, the treatment of diabetes requires children to live a life with greater discipline. Considering, then, the chronicity of the disease, which will accompany the children throughout their

life, it is essential to develop health strategies that contribute to greater knowledge about the disease and its care.¹⁵

Therefore, educating for diabetes involves the need for an individual and family learning process that promotes progressive monitoring for the development of the child's autonomy for assuming their own care.²³

The nurse who accompanies the child with DM1 should seek educational strategies that encourage the child to know their disease condition and seek self-care. Thus, the TT can and must be used as an adjunct in this process.^{5,9}

The technical procedures for the care with DM1 can be reproduced without the individuals having real knowledge of their actions. In this context, although recognizing the need for care, children often do not seem to be able to clearly assess the risks and complications that the failure to correctly perform the procedures can cause for their health, and it is up to the family members to guide them in this regard.²³

It is worth noting that understanding about treatment promotes the development of appropriate coping strategies, which makes children more participatory, enabling the acquisition of self-care skills.²⁴

The mother presents herself, in general, as the caregiver in her children's illness situations. The child's chronic condition becomes a challenging situation for the mother, but the confidence and ability to deal with adversities arise for her throughout the time of diagnosis and through daily practice.²⁵

She also becomes an example and reference to be followed by the child in their experience with the disease. The way and the importance with which the disease will be treated in family life will directly influence the way in which the child will proceed with the care throughout their development and maturation.²⁶

The concern with food restriction and carbohydrate control was made explicit during the children's play. Although it is extremely difficult for the families to live with the dietary restrictions to which children with diabetes are subjected, this care is essential to avoid glycemic decompensations and complications of the disease in the short- and long-term, constituting an element capable of generating feelings of ambiguity in the children, about the care they receive.²⁷

Thus, if on the one hand the child has the desire to eat sweets, which is common in childhood, on the other, there is an urgent need to contain this desire, due to the disease. Therefore, given the diagnosis of DM1 and considering that, invariably, the eating behavior is a reflection of the family's eating habits, it is necessary to guarantee guidance and support as this is the cornerstone for the care targeted at this condition of the child.^{4,26,28}

In the study, the difficulties faced by the children were demonstrated by feeling different from their peers, as a result of their condition. Children experience the conflict between being a child and doing what they want and not being able to act like other children in their age group, due to the need to adhere to the treatment and the difficulty in accepting the limitations imposed by the disease.²⁹

Although they recognize that care is necessary for glycemic control, many children consider daily insulin injections and checking capillary blood glucose, in addition to being painful, as something atypical and incompatible in their childhood experience.⁸

It is verified that the younger the children are, the more naturally they seem to incorporate the necessary procedures to control blood glucose in their routine. However, they intensely experience feelings of pain and sadness, depending on their condition.⁸

Considering all such issues surrounding the child's disease and living with the chronic condition, educational interventions are made essential in order to cover the pillars of the care with DM1 and the identification of the emotional factors that may generate difficulties in developing adequate care for each child.^{15,20}

CONCLUSIONS AND IMPLICATIONS FOR THE PRACTICE

The study managed, in addition to the proposed objective, to describe the use of therapeutic toys in the home care of children with type I Diabetes Mellitus and contributed to the understanding of this experience lived by the child. Using the TT as a care tool for children with DM1 allowed opening a communication channel between the professional and the children, making them express their feelings and experiences about their health condition.

When using the TT as a communication and education strategy for children with diabetes, the nurse turns it into a care technology, which expands the possibilities of Pediatric Nursing with this population, contributing to minimize their suffering, providing individualized care, identifying different aspects of each child and the factors that should influence their development in order to provide more humanized assistance.

Conducting home TT sessions points to another alternative in the work of disease prevention to be performed by nurses in primary health care, expanding the quality of Nursing care to the pediatric population, especially in chronic diseases, through ludic means.

The study limitation was configured in the difficulty for capturing children with DM1, which led to the need to extend the geographical limits of the research beyond the municipality and surrounding cities, encompassing the scope of the 11th health regional in the state. Such difficulty can be due to the lack of a municipal and regional register for this clientele, which ultimately reveals a gap in the health care of this population. It derives from such findings that this clientele may be neglected in their care, being deprived of systematic assistance after diagnosis in the health services.

AUTHOR'S CONTRIBUTIONS

Study design. Leticia Roberta Pedrinho. Ieda Harumi Higarashi. Data collection or production. Leticia Roberta Pedrinho.

Data analysis. Leticia Roberta Pedrinho. Ieda Harumi Higarashi. Bianca Machado Cruz Shibukawa. Gabrieli Patricio Rissi. Roberta Tognollo Borota Uema. Maria de Fátima Garcia Lopes Merino.

Interpretation of the results. Leticia Roberta Pedrinho. Ieda Harumi Higarashi. Bianca Machado Cruz Shibukawa. Gabrieli Patricio Rissi. Roberta Tognollo Borota Uema. Maria de Fátima Garcia Lopes Merino.

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REFERENCES

1. International Diabetes Federation. Diabetes atlas. 9th ed. [Internet]. Brussels: IDF; 2019 [citado 2020 jul 9]. Disponível em: <https://www.diabetesatlas.org/en/>
2. Katsarou A, Gudbjörnsdóttir S, Rawshani A, Dabelea D, Bonifacio E, Anderson BJ et al. Type 1 diabetes mellitus. *Nat Rev Dis Primers*. 2017;3:17016. <http://dx.doi.org/10.1038/nrdp.2017.16>. PMID:28358037.
3. La Banca RO, Filietaz CFT, Tavares VR, Borba RIH. Compreendendo o ser adolescente com complicações do diabetes por meio do brinquedo terapêutico dramático. *Rev. Norte Mineira de enferm*. 2020;9(1):1-10. <https://doi.org/10.46551/rnm23173092202090101>.
4. Fornasini S, Miele F, Piras EM. The consequences of Type 1 diabetes onset on family life. An integrative review. *J Child Fam Stud*. 2020;29(5):1467-83. <http://dx.doi.org/10.1007/s10826-019-01544-z>.
5. Chiang JL, Maahs DM, Garvey KC, Hood KK, Laffel LM, Weinzimer SA et al. Type 1 diabetes in children and adolescents: a position statement by the American Diabetes Association. *Diabetes Care*. 2018;41(9):2026-44. <http://dx.doi.org/10.2337/dci18-0023>. PMID:30093549.
6. Oakley NJ, Kneale D, Mann M, Hilliar M, Tan J, Dayan C et al. Association between type 1 diabetes mellitus and educational attainment in childhood: a systematic review protocol. *BMJ Open*. 2018;8(8):e021893. <http://dx.doi.org/10.1136/bmjopen-2018-021893>. PMID:30166302.
7. Feldman MA, Anderson LA, Shapiro JB, Jedraszko AM, Evans M, Weil LEG et al. Family-based interventions targeting improvements in health and family outcomes of children and adolescents with Type 1 diabetes. *Curr Diab Rep*. 2018;18(3):15. <http://dx.doi.org/10.1007/s11892-018-0981-9>. PMID:29457190.
8. Pennafort VPDS, Queiroz MVO, Gomes ILV, Rocha MFF. Instructional therapeutic toy in the culture care of the child with diabetes type 1. *Rev Bras Enferm*. 2018;71(Suppl 3):1334-42. <http://dx.doi.org/10.1590/0034-7167-2017-0260>. PMID:29972532.
9. Iáñez MJG, Cabrera MBM, Martos NS, Urquiza JLG, Román KV, Jiménez MJM et al. The use of children's stories in nursing care for the child: an integrative review. *Health Care (Don Mills)*. 2020;8(239):1-12.
10. Aranha BF, Souza MA, Pedroso GER, Maia EBS, Melo LL. Using the instructional therapeutic play during admission of children to hospital: the perception of the family. *Rev Gaúcha Enferm*. 2020;41:e20180413. <http://dx.doi.org/10.1590/1983-1447.2020.20180413>. PMID:32348422.
11. Calegari T, Gimenes BP, Luz JH, Campos YA, Borba RI, Ribeiro CA. Autist child in session of dramatic therapeutic play: Winnicott's analysis.

- Rev. Soc. Bras. Enferm. Pediatr. 2018;18(1):43-8. <http://dx.doi.org/10.31508/1676-3793201800007>.
12. Yin RK. Case study research and applications: Design and methods. Califórnia: Sage publications; 2017.
 13. Lacerda MR, Costenaro RGS. Metodologias de pesquisa para a enfermagem e saúde: da teoria a prática. Porto Alegre: Moriá; 2016.
 14. Hockenberry MJ, Wilson D, Wong. Fundamentos de enfermagem pediátrica. 9ª ed. Rio de Janeiro: Elsevier; 2016.
 15. Sociedade Brasileira de Diabetes. Diretrizes da Sociedade Brasileira de Diabetes 2019-2020. São Paulo: Clannad; 2019.
 16. Minayo MCS, Deslandes SF, Gomes R. Pesquisa Social: teoria, método e criatividade. 28ª ed. Petrópolis: Vozes; 2009.
 17. Rocha PK. Crianças vítimas de violência: cuidar brincando. Blumenau: Nova Letra; 2006.
 18. Renz SM, Carrington JM, Badger TA. Two strategies for qualitative content analysis: an intramethod approach to triangulation. Qual Health Res. 2018;28(5):824-31. <http://dx.doi.org/10.1177/1049732317753586>. PMID:29424274.
 19. Vargas DM, Barbaresco AC, Steiner O, Silva CRLD. Um olhar psicanalítico sobre crianças e adolescentes com Diabetes Mellitus Tipo 1 e seus familiares. Rev Psicol Saúde. 2020;12(1):87-100. <http://dx.doi.org/10.20435/pssa.v12i1.858>.
 20. Moura FM. Vivências de crianças com Diabetes Mellitus tipo I [tese]. João Pessoa (PB): Departamento de Enfermagem, Universidade Federal da Paraíba; 2016.
 21. Delamater AM, Wit M, McDarby V, Malik J, Hilliard M, Northan E et al. ISPAD Clinical Practice Consensus Guidelines 2014. Psychological care of children and adolescents with type 1 diabetes. Pediatr Diabetes. 2014 set;15(Suppl 20):232-44. <http://dx.doi.org/10.1111/pedi.12191>. PMID:25182317.
 22. Silva RDM, Austregésilo SC, Ithamar L, Lima LS. Therapeutic play to prepare children for invasive procedures: a systematic review. J Pediatr (Rio J). 2017;93(1):6-16. <http://dx.doi.org/10.1016/j.jped.2016.06.005>. PMID:27485756.
 23. Collet N, Batista AFMB, Nóbrega VM, Souza MHN, Fernandes LTB. Self-care support for the management of type 1 diabetes during the transition from childhood to adolescence. Rev Esc Enferm USP. 2018;52(0):e03376. <http://dx.doi.org/10.1590/s1980-220x2017038503376>. PMID:30484485.
 24. Moura FM, Costa Jr AL, Dantas MSA, Araújo GCB, Collet N. Playful intervention with chronically-ill children: promoting coping. Rev Gaúcha Enferm. 2014;35(2):86-92. <http://dx.doi.org/10.1590/1983-1447.2014.02.41822>. PMID:25158466.
 25. Lindström C, Åman J, Norberg AL, Forssberg M, Anderzén-Carlsson A. "Mission Impossible"; the mothering of a child with Type 1 diabetes - from the perspective of mothers experiencing burnout. J Pediatr Nurs. 2017;36:149-56. <http://dx.doi.org/10.1016/j.pedn.2017.06.002>. PMID:28888496.
 26. Gomes GC, Moreira MAJ, Silva CD, Mota MS, Nobre CMG, Rodrigues EF. Vivências do familiar frente ao diagnóstico de diabetes mellitus na criança/adolescente. J. Nurs. Health. 2019;9(1):e199108. <http://dx.doi.org/10.15210/jonah.v9i1.13393>.
 27. Tascini G, Berio MG, Cerquiglini L, Santi E, Mancini G, Rogari F et al. Carbohydrate counting in children and adolescents with Type 1 diabetes. Nutrients. 2018;10(1):109. <http://dx.doi.org/10.3390/nu10010109>. PMID:29361766.
 28. Queiroz MVO, Brito LMMC, Pennafort VPS, Bezerra FSM. Sensitizing children with diabetes to self-care: contributions to educational. Esc. Anna Nery Rev. Enferm. 2016;20(2):337-43. <http://dx.doi.org/10.5935/1414-8145.20160046>.
 29. Sparapani VC, Borges ALV, Dantas IRO, Pan R, Nascimento LC. Children with Type 1 Diabetes Mellitus and their friends: the influence of this interaction in the management of the disease. Rev. Latino-Am. Enfermagem; 2012;20(1):117-24. <http://dx.doi.org/10.1590/S0104-11692012000100016>.