EXPERIENCE EXCHANGE

The use of puppets as a strategy for communicating with children with type 1 diabetes mellitus

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Abstract
The use of puppets is an effective strategy for promoting children to express thoughts and feelings about daily experiences. However, very little information is available about its use in children with type 1 diabetes mellitus. The procedures for using puppets during qualitative interviews in children with Type 1 diabetes mellitus were described, which involved three steps: 1) constructing the scenario – a “stage” that simulates the environments they encounter (school, home); 2) making puppets that represent the child and people (parents, teachers, siblings, friends) encountered daily, and 3) promoting expression of thoughts and feelings using puppets during qualitative interviews. The advantages of using puppets were to allow children with type 1 diabetes mellitus to freely express thoughts and feelings about living with diabetes, to provide them with opportunities to demonstrate diabetes management behaviors, and expose factors that may interfere with diabetes management. A limitation to the use of puppets was the interviewer requiring skills to dynamically engage the child and encourage their active participation during the interaction. The use of puppets was recommended as a creative strategy for use in children with type 1 diabetes mellitus during qualitative interviews.

Key words
Children, Communication, Puppets, Type 1 diabetes mellitus

Introduction
Communicating with young children with type 1 diabetes mellitus (T1DM) may be challenging because of limited language and cognitive abilities [1]. In research, these young children had difficulty with use of self-report measures because of their developmental level, short attention span, and lower ability to express their thoughts and feelings using paper based measures [2, 3]. They may also have difficulty with responding honestly when adults read questions. In general, young children preferred toys and objects that represented or imitated real life [4]. Children may be able to respond better
through involvement in age-appropriate activities that would allow themselves to express openly about their thoughts, feelings, and experiences [5, 6].

The environment, where the contact with the child will take place, has also to be prepared. Besides promoting greater involvement with the child, a suitable environment favors his/her interaction with the professional, including the child's body expressions [7]. Offering choices about the environment where the interaction would take place and incorporating the choices during interviews would facilitate success in obtaining the data [7]. The professional would also be able to assess the type of environments where children have their daily activities and where their social interactions occur. These issues can make children feel more comfortable and able to talk more openly about their experiences [7].

Although technological resources such as internet, interactive scenarios, and mobile communication devices exist and promote successful interactions [11], these technologies were not always available in resource limited areas. Some studies report the positive and negative aspects of using dynamic techniques with children such as toys, puppets, games, and story-telling [8, 9]. Health professionals and researchers have used simple and relatively cheap strategies such as the use of puppets. Successful experiences with the use of puppets were reported in clinical practice [12], education [13, 14], and research [2, 15, 16]. These studies emphasized the success of the use of this strategy in children with chronic diseases who require daily management of the disease, coping strategies, and adaptation [10, 13].

There is very little in the literature about the use of puppets to facilitate communication in children with T1DM. The use of puppets may be useful not only in communicating with children in clinical practice, but also in engaging children with T1DM during qualitative research interviews and when encouraging them to talk about coping with this disease [10]. Increased communication with children through the use of puppet was presented in a few studies [10, 13, 16], however, no details were provided about the environment where the children’s interaction occurred. Therefore, the purpose of this article is to describe the procedures for using puppets during qualitative interviews in children with T1DM. The following three steps are illustrated: 1) procedures for using puppets in children with T1DM; 2) construction of environments (school, home) and people (teachers, friends, siblings, parents) that provided the setting for the use of puppets; 3) advantages and limitations of the use of puppets during qualitative interviews in T1DM. Examples of interviews of children with T1DM were drawn from authors’ clinical and research experiences.

**Literature review**

It is essential for providers to perform an adequate assessment of children’s perceptions of their disease according to their developmental level. The children’s understanding of disease related experiences such as emergencies, loss of glycemic control, self-care tasks, and relationships with family and social network [15, 17], can guide educational interventions and provide quality of care. These perceptions may affect children’s attitudes and behaviors that compromise successful management of disease [18].

Puppets have been used for thousands of years. Archeological excavations in Egypt found puppets made more than three thousand years ago. In India, members of the royal family used to play with gold and silver puppets. Over the years, these puppets were incorporated into folklore all over the world, with popular characters in Italy, England, France, Russia, Germany and Brazil [19]. Its pedagogical value may be highlighted when combined with children’s ability to dramatize, freely express feelings and emotions, creativity, and self-knowledge. Children observed and remembered facts, imitated them, and added personal characteristics and experiences to what they observed [20].

Puppets were used to facilitate communication with children since the 1950s in different situations. Children used puppets to discuss relatively complex issues like suicide, sadness, aggressive behaviors towards friends, emotional, and behavioral disorders [2]. More recent studies in the 1990’s reported the use of puppets to assess children’s perceptions of themselves [7, 20]. Puppets were used as a therapeutic technique to teach elementary school children about health issues [12].
Researchers traditionally interviewed parents to collect data about their children, rather than interviewing children themselves. Over the years, children were increasingly participating in research and were able to provide data about their experiences. However, there is very little information about the use of puppets and whether its use may facilitate children’s expression of thoughts, feelings, and experiences during qualitative interviews in children with T1DM. Furthermore, details about the use of the environment (school, home, leisure sites), and people (teachers, friends, siblings, parents) that children interacted with daily were often not provided in the literature.

There were only three studies that used puppets in children with chronic illness. These three studies were conducted in older children who were able to communicate their experiences about the disease and their views on health services. Very little information was provided about younger children’s thoughts, feelings, daily interactions with others (parents, siblings, teachers, friends), and how they were coping. There is also very little information in the literature about the environment of young children with T1DM. Constructing an environment that simulates their daily life may promote greater involvement with the child and reveal the child's thoughts, feelings, and body expressions, as well as social interactions that occur in these environments.

**Procedures for using puppets in clinical practice and research**

The authors used three steps when using puppets during clinical practice or research interviews: 1) constructing the scenario—a “stage” that simulated the environments children with T1DM lived in (i.e., school, home, leisure sites); 2) making puppets that represented the child and people encountered daily (i.e., as parents, teachers, siblings, friends), and 3) promoting expression of thoughts and feelings using puppets during clinic visits or qualitative interviews.

**Constructing the Scenario.** To construct the scenario, a mobile, colored fabric panel, measuring $1.40 \times 2$ meters was used. The panel simulated a space with open windows that permitted communication on both sides of the fabric. Children with T1DM were invited to observe the drawing on the panel and to think about a place in their daily life that the panel represented. Scenarios represented the children’s daily life and an ecomap represented their interactions with others. The ecomap was a diagram that depicted the family members’ contact with larger systems. The ecomap was designed with the children in order to represent interactions with family members (parents, siblings, grandparents), and others (classmates, friends, teachers, doctors, nurses).

The ecomap was used during individual interviews with children during clinic visits or data collection. It represented places they visited every day, such as school, the homes of friends and relatives, and leisure sites such as parks and swimming pools. Children drew objects and significant people, particularly those who helped them or did not help them with disease management. The drawing materials were distributed and the children were allowed to freely create. Children were able to draw figures representing teachers, classmates, doctors, nurses, family, sports and leisure activities, capillary glucose devices, syringes and insulin vials. At the end of the activity, they were encouraged to talk about what they drew and the reasons for drawing them.

The children were then instructed to cut out the drawings and leave them to be plasticized for conservation. A system was developed to make it easier to place each drawing on the fabric panel during the interactions with children. As each drawing was personal and may not be understood by another child, a “standard kit” was prepared with all drawings the children made. This “kit” was presented on the day of the individual interviews. The kit together with the drawings and the fabric panel provided the background scenario for talking about children’s thoughts, feelings, disease management behaviors, and situations interfering with disease management. An example of a scenario constructed by children with T1DM is illustrated in Figure 1. It consisted of a) the fabric panel; b) the items drawn by the children to be placed in the fabric panel, such as people, toys, and leisure places; c) and the “standard kit”, which contained figure drawing representing friends, family members, and items used daily, such as food and medical equipment.
**Figure 1.** Scenario constructed by children with T1DM.

**Legend:**
1. Panel
2. Bike
3. Leisure place
4. The child playing volleyball
5. Fruits
6. Television
7. Friends
8. Glucometer
9. Refrigerator with its door opened, showing the insulin (9a), some sweets (9b) (“standard kit”) and fruits (9c)

*Making the puppets.* Children were provided materials to make puppets. Some materials included pieces to represent body parts, different sizes of soft, colored socks, colored wool strings, cardboard, tissues, crude paper, fake eyes, glue, scissors, and a stapler. The children were instructed to choose the materials and make the puppets to represent any person they wanted, such as a friend or school mate, sibling, mother, father, school teacher, grandparent, and others that they encountered daily. They were instructed how to make the puppets. During interactions with health care providers or researchers, they identified the people representing the puppets. Examples of puppets made by children with T1DM are illustrated in Figure 2, where the puppets represented a child’s friend, a father, a nurse, and the child.

**Figure 2.** Examples of puppets made by children with T1DM, representing friends, parents, health professionals.

**Legend:**
1. father
2. friend
3. nurse
4. child

*Using Puppets During Interviews with Children.* Prior to the use of puppets during clinic or research interviews, the purpose of the meeting was first explained. The interviewer offered the option of having the parent present or not. The interviews occurred in a private room, where the panel, the “standard kit”, the figures drawn, and the puppets previously prepared were made available. Four additional puppets were introduced to represent male and female adults, a child and a
person wearing clinical attire typically worn by health care providers. The children were informed that these extra puppets may represent other people in case they wished to include them.

The children were invited to sit near the panel, the “standard kits”, puppets, and the ecomap to engage them in conversation [22, 23]. They were then asked to recall the people and environments, and to select a place to start talking. They selected the figure drawings to characterize the scenario and positioned them on the panel. For example, they could select to start the narrative by visiting the home. The parent figures were placed on the panel. They could add a refrigerator containing the insulin and different types of food, a computer, syringes and a glucometer. When they were timid or not involved in the activity, they were encouraged to choose a drawing and to explain its function in the environment, minimizing the physical space where the conversations took place.

After setting up the scenario, they stayed in front of the panel, to allow easy access to the other drawings and puppets. The interviewer was positioned on the other side of the panel, also using a puppet to represent self, and acted as a visitor to the created environment that was viewed through the communication window. Prompted by the interviewer, they used the puppets to express factors they considered relevant for managing the disease, in each place (school, home, leisure site) as supported by the scenario. Based on the children’s discourse, the interviewer used all possible opportunities to visit and explored other environments of the scenario. As the drawings were mobile, they were able to easily characterize each according to their experience. An example of an interview scenario was illustrated in Figure 3 and included the panel, figures drawn by the children, the “standard kit” and the puppets representing the interviewer, child and others.

**Figure 3.** A child interview: the scenario, the child interviewed and the researcher.

**Legend:**

1. Panel
2. Family
3. Television
4. Teacher
5. Friends
6. Mother
7. School
8. Friends
9. Volleyball
10. Glucometer
11. Refrigerator with its door opened, showing the insulin and some sweets and fruits.
12. Child Interviewed
13. Researcher

**Examples of conversations with children with T1DM**

The children were able to use the puppets creatively, and either spontaneously or as prompted by the interviewer. The puppets represented friends, teachers and parents by adding a character in their other hand. As the children explained to the interviewer that another person was included in the conversation, they held the puppet representing self in one hand and another puppet representing another person in the other hand. On those occasions, the children may change voices, simulating the other persons who were part of the conversations.

An example of the dialogue between a child, her mother and the interviewer was illustrated in the following:
- Interviewer: “So, here on the farm, who else is on the farm? Is your mother there?”
- Child: “My mother’s there!”
- Interviewer: “Ah, I would like to meet her!”

[At that moment, the child chooses a puppet to represent her mother and puts it in her other hand]
- Interviewer: “Hi Mrs. Barbara!”
- Child [using the puppet that represented her mother]: “Hi! How are you?”
- Interviewer: “I’m fine. I would like to know what your daughter usually eat and all the food you prepare? Can she eat all kinds?”
- Child [using the puppet that represents her mother]: “Yes she eats all kinds! But if she eats the vegetable salad with mayo, she can’t eat a lot of rice, right? Because the mayo already contains sugar, right? And so does the rice; it’s pasta that turns into sugar in the blood.”
- Interviewer: “What do you think about this diet your daughter has to follow?”
- Child [using the puppet that represents her mother]: “Ah! I really feel sorry for her, because she can’t eat anything, right?”

In another example, a 9 year old child with T1DM used the puppet to communicate with the interviewer, trying to explain the support she received from her best friend. The friend was aware that the child had diabetes, and had enough information to help the child make good food choices and to prevent hypoglycemia:

- Child: “You know what I want? I want to introduce you to a friend who always helps me take care of my diabetes” [child with two puppets: one that represented herself and another that represented her best friend].
- Child: “Yeah! Here she is” [her friend].
- Child: [Using the puppet that represented her friend, the child changed the tone of her voice and presented herself]. “My name is Maria.”
- Interviewer [At this moment, the interviewer spoke to the puppet that represented her friend]: ….[Name of Child] “told me that you help her to take care of the diabetes. Is it true?”
- Child [using the puppet that represented her friend]: “It is really really true. I help her with her diet, because she has to bring cracker, has to take two glasses of milk each day. I say everything to her. (…)” [Making comment about the fact that she knows about the diagnosis of the child with T1DM, she adds:] “I think it is nice, because now I can take care of her.”

Important statements were obtained by using the puppets. Through conversations, the children presented facts and expressed the thoughts of people they lived with from the child’s perspective. Through these examples, their knowledge about diabetes was revealed, such as the need to have balanced nutrition with each meal, and limitations in sugar intake and carbohydrates. Moreover, puppets allowed children to freely express the difficulty of not being able to eat all kinds of food like their peers.

The interviewer also engaged in dialogues with additional characters, expanding opportunities to get to know behaviors, actions and interpretations on aspects of the disease, and factors that may interfere with diabetes management from the child’s viewpoint. Here is an example from a 12 year old during the management of a diabetes related emergency situation:

Child [Using the puppet that represents her aunt, the child with T1DM changes her voice and says]: “She had a seizure! I don’t remember very well, because it was a long time ago! I think she was about six! I had to put sugar...
on her mouth, to see if she reacted. But failed… I had to call an ambulance and asked my husband to take her to the Emergency! (...) After that she got better. She was on IV with glucose and then she was coming back slowly.”

In these examples, the children were able to demonstrate interactions with people and aspects related to diabetes management, and conversations between other people (friends, parents, other family members). The interviews were terminated when the children expressed that they no longer wanted to visit any other environment. The children received the puppet at the end of the interview.

**Advantages of using puppets**

Seeking strategies to strengthen communication with children with T1DM in research and clinical practice has been challenging. The use of puppets facilitated the interaction and communication about the children’s daily experiences in living with T1DM, and made the interviews calm and fun for them. Having a group of children in the beginning to construct the scenario and the puppets facilitated the use of the puppets on the day of the interview. This approach could tighten the bonds between children and the interviewer and could effectively contribute to the success of the interview [10].

A second advantage of using puppets was the opportunity to broaden the span of each interview by exploring the environments and people they interacted with daily. Puppets encouraged the children to express thoughts and feelings of parents, friends, and other family members, resulting in more detailed information obtained during interviews. The interviews were a minimum of 40 minutes and a maximum of one hour.

A third advantage was the materials to make the puppets, such as socks were readily available, easy to make, comfortable and flexible. The puppets allowed the children with T1DM to express feelings with crying, sadness, joy and doubt as reported previously in children with other chronic illness [16]. Puppets with a mouth facilitated verbal expression in children with T1DM, as well as oral interests like eating as reported previously [24].

A fourth advantage was the creation of the ecomap granted the children freedom to talk about daily events in familiar environments. The scenario simulated objects and challenges they encountered. Children selected the space, the aspects they found important in managing the disease, and they felt more comfortable [24], giving them some sense of control during the interview [6]. As in previous reports [10, 14, 25], they were able to tell past and current stories, as well as different situations in fun and meaningful ways [25, 26].

A fifth advantage was the children with T1DM showed great involvement and pleasure at the end of the interviews. When asked about how they liked the puppets they expressed satisfaction with the use of this strategy. Using the puppet that represented the interviewer, the children were asked: “Did you like to play with the puppets?” Using the puppets that represented them, examples of responses were: “It was cool”! “It helped me a lot!”

Here is an example of a twelve-year-old girl’s response regarding how she liked the puppet:

- Interviewer: “Did you like to talk?”
- Child: “Yes I did!”
- Interviewer: “Why?”
- Child: “Because I don’t talk a lot.”
- Interviewer: “And did you like to play with the puppets?”
- Child: “Yes I did!”
- Interviewer: “Why? Is there any reason why you liked it?”
- Child: “No. I had done that in school already, but I didn’t like it. In school it’s really boring. The teacher annoys me, she keeps on telling me what to do.”

- Interviewer: “Ah! And here you think you were freer?”

- Child: “Yes” [agreeing].

**Limitations on the use of puppets in T1DM**

The interactions between the interviewer and the children were crucial to the success of using puppets. The interviewer need to participate actively, effectively using puppets, that included a variety of feelings such as doubt, surprise, joy and using body movements to engage dynamic interaction with the children. The interviewer need to behave like an actual visitor to the children’s environment, need to be encouraging and prompting the children to use the puppets and the scenery. The skills of the interviewer were valuable, especially the creativity, and the opportunity given by the children during the conversations to explore details of the experience. Lacking these skills and attributes would limit the use of puppets in conversations with the children.

Secondly, the availability of adequate resources and interview sites was key in the success of the puppet strategy. Socks should fit the child’s hands, to allow free movements and to represent situations and specific expressions. Interview sites should be selected so that the children would be comfortable and privacy would be maintained. The children should also feel a sense of confidence and security of having parents readily available as desired.

The use of puppets with children and adolescents in qualitative interviews and clinical practice can be in a greater or lesser degree, depending on the context in which this population lives. Social, cultural and socioeconomic conditions may limit or favor the use of this strategy. Researchers should be encouraged to use and describe it in great detail, which can promote discussion of its use in various contexts and exchange of experiences. This practice could enhance the abilities to use puppets and spread its applicability, which benefits children with T1DM, health professionals, and researchers.

**Conclusion**

Offering young children with T1DM, the opportunity to express thoughts and feelings about events in daily life will increase understanding of disease related actions and behaviors, as well as difficulties with adhering to treatments and dietary restrictions. A major challenge confronting health care providers and researchers was to obtain honest and detailed reports from children living with T1DM. The use of puppets could facilitate gathering information, and promote meaningful interaction.

**Clinical relevance**

Nurses work with children with T1DM who may be frequently admitted for conditions related to non-adherence to treatment. To investigate problems encountered by children and families require creative use of simple and effective communication strategies. The use of puppets may allow the nurses to identify gaps in knowledge and examine challenges and barriers to disease management at home. The use of puppets and ecomaps built by children may allow nurses to engage them in meaningful conversations and evaluate treatment adherence and disease management behaviors.

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