

# DEVELOPMENT OF HEALTH COMPETENCE OF CHILDREN WITH DIABETES MELLITUS IN THE SUMMER CAMP ENVIRONMENT

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**Abstract.** *Diabetes mellitus is becoming a leading disease in paediatric endocrinology, which causes health problems and complications that can shorten life expectancy. The object of the research is the development of health competence of children with diabetes mellitus in the summer camp environment. Research aim is to reveal the development of health competence of children with diabetes mellitus in the summer camp environment. Tasks: 1) to identify the development of health competence in the environment of summer camps; 2) to reveal health topics being discussed by children in summer camps; 3) to reveal pedagogical interactions between the educator and the students in the environment of summer camps. Research methods: theoretical: analysis, generalisation and systematisation of scientific literature; empirical: document analysis. The research found that not only does the environment of summer camps contribute to the development of health competence of children with diabetes mellitus but it also encourages them to fully get used to living with the disease and creates a favourable educational environment that encourages communication. The research revealed that in the summer camp environment children discuss the following topics: blood sugar control, causes of diabetes mellitus and independence in managing the disease. The summer camp environment is friendly, active as well as engaging and tolerant of learner interaction.*

**Keywords:** *diabetes mellitus, education, health competence, summer camp.*

## Introduction

Diabetes mellitus is a disease, when the body's processes that maintain a normal concentration of glucose in the blood are disrupted. In people with diabetes, the level of blood glucose increases, the entire metabolism gets affected (Devi, Bai & Nagarajan, 2020). In Lithuania, cases of type I diabetes in children have been registered since 1983. More than 995 children and young people (up to 19 years old) were registered in 2019. On average, more than 80 children contract diabetes in the country per year (Institute of Hygiene, 2020). When a child is diagnosed with diabetes mellitus, children and parents must immediately start learning, as they need to acquire health competence to be able to control the disease and cope with it (Ergun-Longmire et al., 2021). Children and parents, who

aim at controlling the disease, need information, skills and values that can be acquired in various educational environments. One of the environments for the development of health competence is the summer camp environment, where children can have fun in the company of friends as well as acquire the necessary health competence knowledge, skills and values (Coats, Hill, Ramsing, Reifschneider & Haegele, 2021). The following article aims to reveal the experiences of children with diabetes in the summer camp environment by answering the problematic question: How does the summer camp environment contribute to the development of health competence? What are the pedagogical interactions between the educator and the learners?

**Research object** is the development of health competence of children with diabetes mellitus in the environment of summer camps.

**Research aim** is to reveal the development of health competence of children with diabetes mellitus in the summer camp environment.

**Tasks:**

1. To identify the development of children's health competence in the environment of summer camps.
2. To reveal health topics discussed by children at the summer camp.
3. To reveal the pedagogical interactions between the educator and the learners in the environment of summer camps.

### **Research methodology**

Qualitative research type was chosen for the study. According to Žydžiūnaitė and Sabaliauskas (2017), the purpose of a qualitative study is to disclose experiences of children with diabetes, related to the possibilities of developing health competence in summer camps, based on the experiences of children with type I diabetes mellitus and the researcher. Observation in the summer camp environment was chosen primarily because in such an environment, children with diabetes mellitus not only acquire knowledge, skills and values related to health competence, but can also become stronger, find friends, develop their individual personalities and overcome difficulties. The second reason is related to the fact that both children and their parents participate in summer camps. Thirdly, there are role models in summer camps (adults with diabetes) who develop health competence through their individual experiences. **Observation was carried out according to the following criteria:** 1) interaction between the educator and the learners; 2) topics related to health competence; 3) environment for the development of health competence and education (favourable/unfavourable and how favourability is created).

**The sample of research.** A criteria-based sample was used in the study. The respondents were chosen according to the following criteria: 1) children with diabetes mellitus; 2) children who suffer from diabetes from the age of 11 to the

age of 16; 3) children who found out about the disease at least one year ago. The observation method was carried out in the summer of 2021 at a summer camp for children with diabetes mellitus and their parents. A total of 10 persons (5 parents and 5 children) were observed during the camp time. However, the following article only provides insights from observing children with diabetes. The duration of observation was one week, while children were participating in discussions. Not only did the researcher record the intended aspects during the observation, but also kept notes (memos) throughout the entire study. The notes (memos) contained carefully recorded insights, ideas and comments of the researcher about the obtained data, their analysis, thoughts about the obtained codes and connections between them (Glaser & Strauss, 2012). The notes (memos) also contained one or another insight that became clear to the researcher during the observation. Discussions were led by volunteer mentors (Rūta and Domas, names were changed), adults, who had diabetes since childhood. The age of research participants ranged from 11 to 16 years. The research was attended by 2 girls and 3 boys.

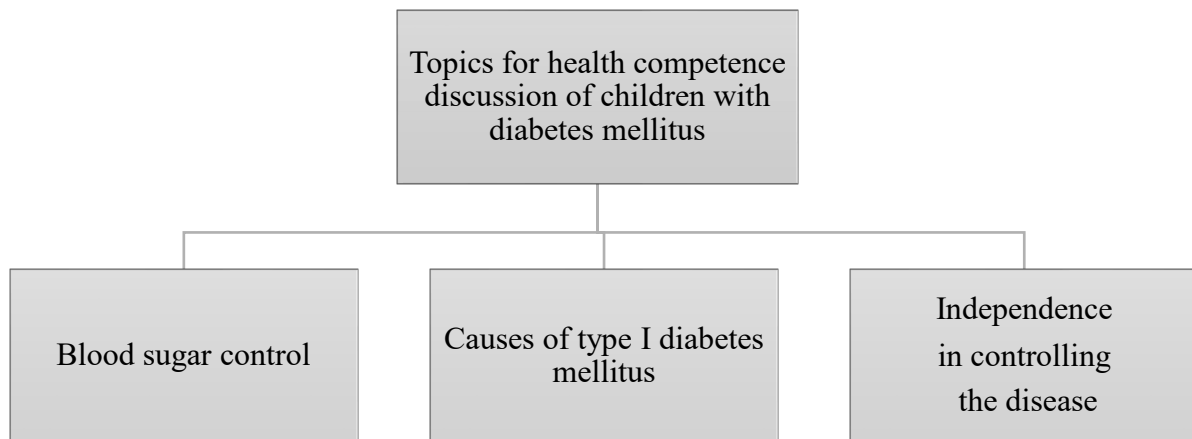
**Ethics of the research.** A parental consent of all research participants was obtained, allowing their children to participate in the research. During the research, the following essential principles of research ethics were complied with (Žydžiūnaitė et al., 2017): **a right not to be vulnerable. a right not to be abused, usefulness of the research** – the research participants wilfully agreed to participate in the research because their participation in a specific research makes a positive impact on the development of society and knowledge, as well as the research of new opportunities in Lithuania; **respect for personal dignity**; every research participant had **a right to make a personal decision whether to participate in the research or not**; **justice** –the participants had an opportunity to ask about the research and receive comprehensive information; the research participants were treated in a respectful and helpful manner; **confidentiality** – The participants of the study participated voluntarily. They were briefed on the purpose and the use of the study, the method of study data collection and the procedure of the study, anonymity and confidentiality were ensured; In order to maintain confidentiality, the names of respondents were encoded by other names – Tomas, Lukas, Tadas, Saulė and Laima.

### **The development of health competence in children with diabetes in the summer camp environment: observational analysis of discussion**

Summer camps are organised by representatives of diabetes organisations and health team, which consists of a diabetes educator and a diabetic nurse. Educational environments of summer camps are formed not only by representatives of the diabetes association, but also by trained volunteers who

create the ambience, ensure that the environment is safe and favourable for children, organise various activities and classes.

The *observational analysis of discussions* of the analysed discussion topics of children with diabetes mellitus, revealed three topics: blood sugar control, causes of type I diabetes mellitus, and independence in controlling the disease (Fig. 1).



*Figure 1* Topics for health competence discussion of children with diabetes mellitus

The analysis of the observation data and the researcher's notes (memos) taken during the research, as well as one's insights, ideas and comments about the obtained data recorded in them, revealed that the most relevant topic for children, which they willingly discussed was **blood sugar control**. The researcher indicates in one's notes: *"Tomas was the first to speak: the young man seemed in a good mood and wanted to ask a question. He was interested to know why it is sometimes difficult to control blood sugar. Volunteer mentor Rūta was the first to answer this question. She said that there are different stages in adolescence when girls and boys mature, which also affects the control of sugar levels."* Later, volunteer mentor Domas joined the discussion, he supplemented the answer of the volunteer mentor Rūta by explaining that various emotions (anxiety, stress, fear) also affect the blood sugar level; thus, these factors are also important, and not the selection of medication doses only. As the researcher observed everything without being directly involved, it was obvious that the *open and simple explanations* of Rūta and Domas **were acceptable** to Tomas. Having received the answer, he was satisfied and nodded his head, confirming that it was now clear to him and that he understood that it is necessary to monitor the various changes in the body. Therefore, this example revealed that *understanding and smooth communication is possible when the child and the volunteer mentor communicate with each other in a simple and friendly manner*.

Another topic of interest to children that emerged during the discussion is the **desire to be independent in controlling the disease**. Laima, one of the

participants of the discussion, who seemed confident and felt comfortable in this meeting, wanted to know: *“How should she tell her parents that she wants to control the disease completely by herself?”* (Because she already does a lot on her own, but her parents still want to help her). The researcher indicates in her notes: *“Rūta and Domas smile and nod in agreement.”* Later, volunteer mentors explained that they too had difficulties in sharing responsibilities with their parents. Volunteer mentor Domas began to share his experience, to tell how he managed to come to an agreement with his parents on this issue. According to Domas: *“First of all, everyone has to gather together and discuss this matter, tell the parents that you would like to control the disease yourself, but if there are any difficulties or questions, you will definitely tell your parents.”*

Therefore, ***an honest conversation with the parents, acting as a team, can help children gradually take full responsibility for their own disease.***

The research identified that another topic relevant for children with type I diabetes is **causes of diabetes mellitus**. A boy called Lukas asked: *“Why does type I diabetes occur?”* Volunteer mentor Rūta explained: *“The cause is not known; scientists have not yet explained why the immune system begins to destroy its own cells that are responsible for producing insulin...”* According to Rūta: *“It will take time for scientists to figure it out and find a way to overcome diabetes mellitus...”* After hearing the answer, Lukas seemed confused and restless.

The following was noticed by volunteer mentors Rūta and Domas. They asked if something was wrong. Lukas answered: *“I’m worried about my brother, because he might get diabetes too...”* In response to the boy’s anxiety, volunteer mentor Rūta talked about her family: *“I have 1 brother and 1 sister, who are completely healthy, they didn’t get diabetes like me...”* After this explanation, Lukas smiled and it seemed that volunteer mentor Rūta managed to calm Lukas down by sharing about herself.

Accordingly, ***an honest sharing of similar childhood experience by volunteer mentors is very important for children, because children understand that they are not alone, that the challenges of controlling and living with type I diabetes are solvable, and that they will receive support and assistance.***

The research revealed that **it is significant not to be afraid to speak about type I diabetes**, but rather to educate friends and the society. Volunteer mentor Domas asked children if their friends knew about the disease and how they reacted to it (whoever wanted to, answered). The researcher records in her notes: *“After everyone exchanged glances, Tadas began speaking (at first timidly and cautiously). He said that his friends know that he has diabetes and accept it well, they are also interested in how the pump and sensors work (technology is important for control). After Tadas finished speaking, volunteer mentors Domas and Rūta were happy and encouraged not to be afraid to talk about type I diabetes, society (friends, acquaintances) needs to be told about that, because this way*

*society becomes more sensitive and accepts the patient as an equal; after all, diabetes is only a disease, not the personality of a person.”*

**Thus, the research revealed that on the one hand, talking about type I diabetes with friends, society helps the child to accept one’s disease and learn to live with it. On the other hand, by talking about type I diabetes, we educate the society and this helps to “not be afraid” of the patient.**

The research found that **controlling the disease and how to properly control it** is an important and relevant topic for children with type I diabetes. A girl called Saulė asked: *“What does good control of the disease depend on?”* In her notes, the researcher indicates: *“Saulė was the youngest at this meeting (11 years old) and she had not yet controlled the disease on her own. Having asked a question, Saulė looked curiously at Rūta and Domas and waited for them to start explaining what good control means.”*

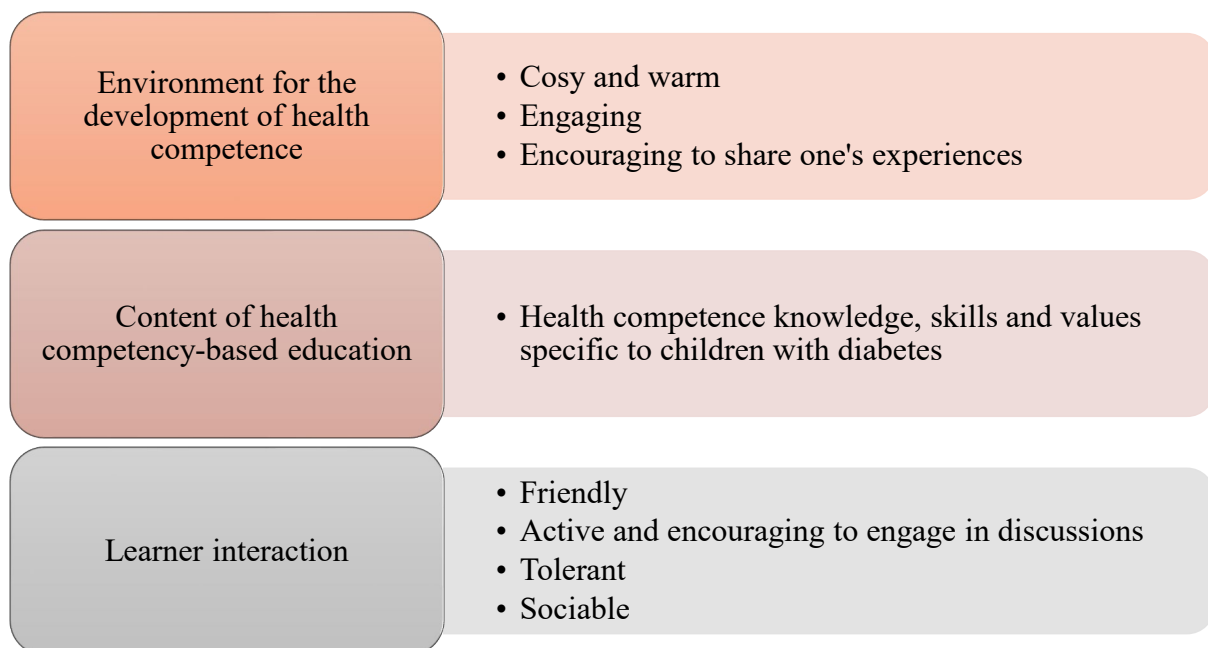
Volunteer mentor Rūta answered: *“Good control of the disease requires monitoring the blood sugar level and trying not to let it be too low or too high. Therefore, it is important not to forget to inject insulin when the sugar level is high, monitor changes in one’s body, eat healthy and maintain physical activity as well as, of course, combine rest time with other activities or studies.”*

Volunteer mentor Domas emphasized: *“It is important to take care of one’s health and preserve it, since diabetes damages the organism, and by avoiding unnecessary bad habits and following a daily routine, it is possible to achieve good control of the disease, which preserves health and helps to keep it as good as possible.”* **Research results show that sharing of experiences between volunteer mentors and children with type I diabetes helps children understand that good disease control helps to maintain optimal health and encourages children to be actively involved in controlling the disease.**

The research showed that the educational environment of summer camps for children with diabetes can help children to learn about their disease and control it. Research carried out by other scientists (Hill et al., 2019; Tumini et al., 2020; Hasan, Chowdhury, Haque & Patterson, 2020) also shows that there is a visible effect on children’s health after time spend at camps: acute complications, such as hypoglycaemia and hyperglycaemia, are less common; children can empower themselves to adhere to the principles of healthy living, which are very important in diabetes.

The authors’ (Hasan et al., 2020) research revealed that the educational environment of camps primarily helps children overcome fear, anxiety and stress; thus, in this regard the camp environment helps manage emotions and, in this way, contributes to controlling the disease. Secondly, during time spend at camps, children improve their nutrition skills and acquire health competence knowledge, skills and values that they lack (for example, about glycaemic control, choosing physical activities). Accordingly, what the environment is like, what kind of content is conveyed, and what the interaction of the learners is, are all important

for the development of health competence. All of the mentioned is shown in Figure 2.



*Figure 2 Educational elements of discussions between children with diabetes*

Children with diabetes took part in discussions with volunteer mentors Domas and Rūta, as well as adults who have diabetes since childhood, who shared personal experiences that can help children overcome difficulties and worries about the future. There was a warm ambience during the discussions. Participants were at ease, they made themselves comfortable: some were sitting, others were standing. Volunteer mentors were smiling and in a good mood, which added warmth and cosiness to the educational environment. Ivaškienė et al. (2021) emphasizes that a teacher must be a multifaceted personality: “One is a creative, critically thinking person, who is able to work in a constant change, effectively plan, organize and manage the educational process, and, most importantly, who understands children and is determined to help them in quality education” (Ivaškienė et al., 2021, p. 18). Accordingly, it can be assumed that the educator influences both the way the educational process takes place and the kind of interaction between the educator and the learners.

As the authors Gedvilienė and Zuzevičiūtė (2007) emphasize, not only do the educator and the learners exchange factual information, but also influence each other’s feelings, moods and general behaviour. Thus, the interaction between the educator and the learner is important not only for the transfer of information and its receipt, but also for learning to communicate and cooperate together, to develop social skills, to learn to tolerate each other, and to respect all participants involved in the educational interaction (Gedvilienė & Zuzevičiūtė 2007). To sum

up the ideas expressed by Gedvilienė and Zuzevičiūtė (2007), all participants of the educational process are inseparable from each other and the more favourable and pleasant the educational environment is created, the more participants can feel at ease and not be afraid to express their thoughts, which encourages the active participation of the learners and the educator in the learning process. As in these observed discussions involving children with diabetes, the educational environment (informal meeting, cosiness of the environment – a small hall with large windows, the communication and simplicity of educators) helped to establish a connection between the participants. The interaction between the educators and the learners was active and encouraged to engage in conversations.

When speaking about the interaction between the educator and the learners, Kurki, Jarvenova and Jarvela (2018) notes that both educator and learners are important in the educational process, who also influence other learners. Therefore, it can be summarized that the interaction between the educator and the learners is essential for both parties: the behaviour of learners in the educational process can determine not only the behaviour of others, but also the behaviour of the educator. The examination of the observed interactions revealed the learners' communication, social skills and tolerance for each other (children did not interrupt and allowed each other to speak and ask questions, listened to the answers, expressed their opinions or nodded in agreement, which gave courage to others to express their opinions or ask a question and not be afraid of being misunderstood). It is crucial that children trust the teacher and consider one a friend, but at the same time, an authority who teaches and imparts knowledge. Vabalas-Gudaitis claims that interaction between the teacher and the learners must be mutual, friendly and developing relationships. It is also emphasized that interaction between the teacher and the learners is as important as the interaction between parents and children (Kairaitis, 2012).

In terms of constructivist interaction between the educator and the learners, which was analysed by Gudžinskienė (2010), it is emphasized that the educator must interest the children by offering a compelling activity, topic, pastime when children can actively do something and explore as well as make their own interpretations, or, in other words, act freely, and the educator is that person who can encourage, answer the questions, help and support. Thus, it can be seen that from a constructivist point of view, the interaction between the educator and the learners is active and aims at cooperation and a common goal. Piaget (2002) highlights that children create knowledge through the interaction of their experiences and ideas; therefore, it can be assumed that in this respect interaction is related to experience (this can be various people encountered, including teachers, situations and circumstances). Based on research on the cognitive development of children, Piaget (2002) identified the processes of accommodation (adaptation of the mental representation of the external world to match new experiences) and assimilation (process, during which an individual or



individuals acquire the social and psychological characteristics of a group), which are the interaction of experiences and ideas. The two processes mentioned focus on how learning is carried out rather than what influences learning. Dewey (1938) brought attention to the fact that interaction between the educator and the learners is necessary and that it must be democratic, when children actively participate in the learning process, express their thoughts and engage in creative activities, but at the same time the educator is involved and encourages to generate thoughts and discoveries.

It should be noted that the children's meeting with volunteer mentors Domas and Rūta corresponded to the constructivist theory of education: all participants of the discussion were actively engaged in the conversation, the educational environment was encouraging to communicate and cooperate with each other. During conversations, all participants shared their experiences and at the same time developed health competence. It is worth mentioning that interaction between children with diabetes and volunteer mentors Domas and Rūta, who carried out the role of teachers in the discussion (they also have diabetes mellitus), was tolerant and friendly. Therefore, interaction between the educators and the learners as well as the educational environment are significant in the development of health competence, because the acquisition of necessary knowledge and development of important disease control skills and values require a health educator (who provides information) and an educational environment, which is formed and implemented by the health educator, while the assimilation of information depends on interaction.

## **Conclusions**

The research established that children with type I diabetes mellitus develop health competence in the environment of summer camps. In the summer camp environment, children not only develop health competence, but also learn to accept the disease, understand it, while experiential learning was also encouraged. Children learn through experience by interacting and collaborating with other children and sharing their background.

The research revealed that the following topics are relevant for children with type I diabetes: blood sugar control, causes of type I diabetes, and independence in controlling the disease.

It became clear during the empirical research that the pedagogical interaction between the educator and the learners is very important in creating a favourable educational environment and transferring knowledge of health competence, conducting a discussion with children. If the educator is able to motivate children, arouse their desire to learn, and establish warm relationships, then children are happy to participate in such discussions and develop health competence.

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