

METHODS AND ACTIVITIES OF HEALTH COMPETENCE DEVELOPMENT IN NON-FORMAL ENVIRONMENT: EXPERIENCE OF CHILDREN WITH TYPE 1 DIABETES MELLITUS

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Abstract. *Diabetes mellitus is a disease when certain processes in the body, which maintain a normal blood glucose concentration, get imbalanced. Research object is educational methods and activities used for the development and training of health competence. The aim of the research is to reveal educational methods and activities used for the development of health competence in non-formal environment, based on the experience of children with type 1 diabetes mellitus. Research methods: theoretical – analysis, comparison, and generalization of scientific literature; empirical – the use of focus group discussions with children with diabetes mellitus for data collection; Empirical research revealed that various educational methods and activities aimed at developing health competences are carried out for children with type 1 diabetes mellitus in non-formal educational environments (medical facilities, summer camps and health camps). The following activities and classes are used in medical facilities: lessons, conversations, questionnaires, and games. Activities used in summer camps are as follows: walks, cycling, games designed to develop physical activity skills. In the educational environment of health camps, the following educational methods and activities are used for the development of health competence for children with type 1 diabetes mellitus: lessons, games, educational activities, trips, and creative activities.*

Keywords: *children, educational activities and methods, health competence, type 1 diabetes mellitus.*

Introduction

Good control of the disease is important for children with type 1 diabetes mellitus, because the quality of disease control, children's knowledge, skills, and approach determine whether damage to other organs or complications that will further impair the child's health will occur later in life (Sherif, Kralev, Slavov, & Kunchev, 2020). Diabetes mellitus causes damage not only to the endocrine system and various organs, but also failure of certain organs (McKendree & Piscatelle, 2021; Bozkurt, Atay, Bilir, Ertekin, Bugra-Koca, & Sabaner 2021; Bulikaitė, 2022). Health competence, which helps to better control the disease and

prevent the development of complications, is important for children with type 1 diabetes mellitus. One of the health competence skills is to follow the principles of a balanced and health diet, i.e. to be able to choose food products and meals that are healthy and useful for the body, and those that can be consumed by people with type 1 diabetes. Maintaining positive relationships with others and having a sense of security (being able to relate to other children and not feel different) is also important for children with diabetes mellitus (Gudžinskienė 2000, 2013). Another important health competence skill is the favourable self-evaluation and management of emotions: it is essential for a child with type 1 diabetes not to give in to negative emotions, but to evaluate oneself favourably.

Researchers emphasize that health competence knowledge about type 1 diabetes, its care and treatment, control of the disease, consequences of the disease and how to avoid them, healthy and balanced diet are very important (McKendree et al., 2021; Bozkurt et al., 2021). The analysis of scientific literature revealed health competence skills related to the child's disease: monitoring blood sugar, knowing how to test blood sugar, injecting insulin and choosing injection sites, calculating insulin doses on the basis of food products, choosing food products and calculating carbohydrates and fats, recognizing acute condition, and quickly taking action (Bozkurt et al., 2021). Health competence skills (specific) are related to the control of the disease, since they all contribute to easier and better management of the type 1 diabetes and stop the progression of the disease.

However, the success of the development of health competence depends on the methods and activities used in developing children's health competence. The active involvement of children and their level of learning also depend on the variety of educational methods (Gudžinskienė 2000, 2013).

Accordingly, the following article seeks to reveal educational methods and activities used in non-formal environments for the development of health competence in children with diabetes, by answering the problematic question: Which of the educational methods and activities are attractive/unattractive for children with diabetes when developing health competence?

Research object: educational methods and activities used for the development and training of health competence.

Research aim is to reveal teaching and learning methods and activities used in non-formal educational environments for the development of health competence, based on the experience of children with type 1 diabetes mellitus.

Research methods: theoretical – analysis, comparison and generalization of scientific literature; empirical – use of the focus group interview method for data collection; use of the content analysis method for the analysis of research data.

Research questions:

1. How do educational methods and activities promote the development of health competence?

2. Which of the methods help children better understand and assimilate information, develop skills and healthy lifestyle values?

Research methodology

Research methods. Qualitative research type was chosen for the study. The purpose of a qualitative study is to disclose experiences of children with diabetes, the teaching and learning methods and activities used for the development of health competence in non-formal educational environments, based on the experience of children with type 1 diabetes mellitus (Yin, 2009).

The method of a semi-structured interview was used in the research. This article overviews problematic question of the research: “How would you like health educators to communicate knowledge about type 1 diabetes mellitus? What activities and classes did best provide information and help to develop healthy lifestyle skills?” The obtained data were analysed by using the content analysis method. The qualitative content analysis was performed in the following sequence: the repeated reading of the content of transcribed interview texts, the distinction of meaningful elements in the text analysed, the grouping of the distinguished meaningful elements into topics and sub-topics, integration of the topics/sub-topics into the context of the phenomenon analysed and the description of their analysis (Mayring, 2014). The content analysis is a valid method for making specific inferences from the analysed text (Ivaškienė & Malinauskienė, 2021).

The sample of the research. A criteria-based sample was used in the research. The respondents were chosen according to the following criteria: 1) children with diabetes mellitus; 2) children who suffer from diabetes from the age of 7 to the age of 15; 3) children who found out about the disease at least one year ago. The study was conducted in August 2021. The duration of the interview was 120 minutes. 7 children with diabetes mellitus participated in the qualitative research. The age of research participants ranged from 8 to 15 years. There were 5 girls and 2 boys who participate in the research.

Ethics of the research. Parents of children who participated in the research, as well as children themselves familiarised with the goal of the research, the interview questions, and the importance of a reasoned reflection on their experience. A parental consent of all research participants was obtained, allowing their children to participate in the research, including the agreement of parents and children to record the interview into a voice recorder.

When analysing the results of the study, the characteristics of the study participants are presented generally while ensuring that personal information, which would allow to recognise a particular participant of the study, will not be presented, the anonymity and confidentiality of the participants and non-disclosure of personal identity information had been guaranteed, the names of the

study participants encoded in letters A, B, C, D, E, F and G. It encoded data of all the study participants are available only to the researcher.

Research results

Educational activities and methods used in the environments of health competence development for children with type 1 diabetes. The findings of the *focus* group discussion revealed that various educational methods, strenuous activities, and classes are used in the environments of health competence development. (Fig.1). Therefore, with the help of games and various puzzles, children with type 1 diabetes mellitus could learn to choose suitable food products, how to calculate the number of carbohydrates and fats in food products, and how to observe personal hygiene.

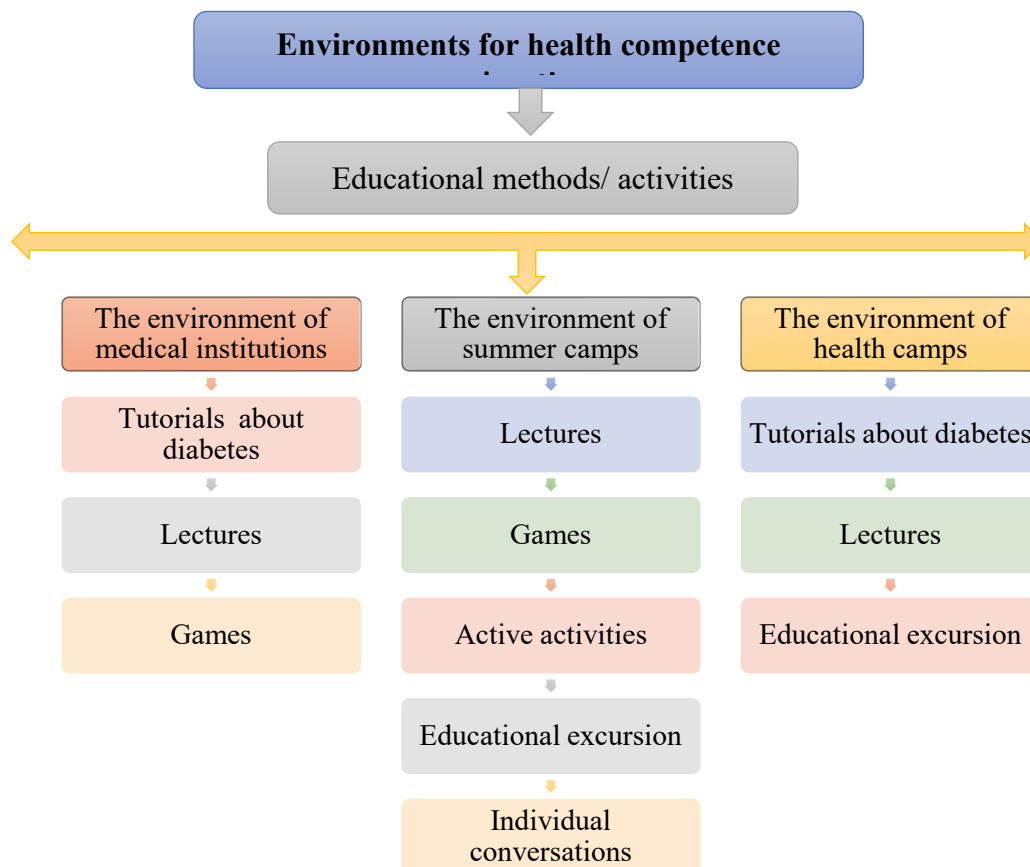


Figure 1 Educational methods /activities used for children with diabetes

The research showed that the first environment for the development of health competence is the environment of medical institutions. The research found that **the following educational methods and various activities are applied in medical institutions:**

“In Klaipėda, in the hospital, there’s also a diabetes educator there, and they give a sheet to count carbs, to measure sugar, and her name is [name], and

we talk with her, I learn more, because she still tells something new. For example, when it's a casserole, you need to inject twice, when it's pasta casserole, you need to inject twice, and so on. So, they help me learn more there, now, when my sugar is 12, I need to inject already. <...> It used to be in the hospital, those with diabetes gathered and there were like games, but I don't remember well, because now they give questionnaires to solve about diabetes, but not anymore, because it's covid now." (D)

There are also classes in clinics, we also count carbs there, then we learn how much insulin we need to inject and when, classes are like that." (G)

Accordingly, in the environment of medical institutions, children with diabetes are provided with knowledge, their skills and value attitudes are developed using the following educational activities: classes, conversations, filling in surveys, questionnaires about diabetes, their discussion, and games. By using a variety of methods, activities, and classes, children are more actively involved in the process of health competence development. Improving the performance of learners is related to the change of activity and rest, while active participation in the learning process by using various educational methods helps children learn more and form knowledge (Gudžinskienė, 2000, 2013). The education must respond to the learner's needs and must be student oriented (Ivaškienė et. al., 2021). In order or the following to be achieved, first of all, it is necessary to fully get to know the students, take into account students' individual and special needs and opportunities, apply various traditional and innovative teaching methods, forms, and tools that would help each student to have a quality education. Thus, it is important that the knowledge of health competence, the development of skills, and formation of value attitudes are presented in an interesting way, using various educational methods.

The analysis of the *focus* groups discussion revealed the following **strenuous activities that are used in summer camps for children with diabetes mellitus**: walks, cycling, games. According to the research participants:

"In the "Smalsučiai" camp, there were two groups from 10 to 15 years old and then older. The first group was always for the smaller, and the second group – for the older. So, then I was smaller, I was in the second group, and we went for walks, then we separately went to eat, because there were no healthy there, so we had to go to another café, later we went to see how dolphins swim, we drove there, we went there with bikes, I don't really remember... There was [name], one helped everyone with their sugar." (D)

"Well, there are various activities in the camps: we play outside all kinds of sports games, there are creative activities, well, for example, we draw on t-shirts, then there are also consultations, well such conversations where we can talk about what worries us and what questions we have." (A)

Hence, activities used in the environment of summer camps (walks, cycling, games) are intended for the development of physical activity skills and to form

value attitude that sports and active physical activities improve the state of health. Another important aspect is that summer camps develop children's creativity skills, which free the children's mind and thus, improve emotional health. Therefore, diabetes camps develop health competence through activities, games, unleashing creativity and providing consultations related to disease management (monitoring and managing sugar levels).

The analysis of the *focus* group discussion highlighted the following **activities and classes used for the development of health competence in health camps**: lessons, games, educational programmes, trips, and creative activities. Research participants noted that:

“You attend those procedures, procedures are placing such heating packs, and such a device is placed on the belly, then there are exercises, massages, and then from twelve you have a whole day free, sometimes there are baths, and there are also classes, there are a lot of activities there. Last Thursday we went to Trakai, wait last one... There are trips like that, I've learned about new pumps and sensors <...> I was here in the school with Chinese when they came here, and I wasn't there anymore. It was not so long ago, those Chinese women gave us pastry tubes, we cooked such snacks, we also went to Trakai. I liked it there too, but not so much, I don't quite like driving, I'm like at home, I want to stay more at home, I don't go anywhere.” (D)

“We play basketball or with cards, main activities here, and also square. And I like these lessons, there, where we cook food, where we count carbs using new ways.” (E)

“So, active games, as my friend mentioned, and we also come to lessons, where's there [name] and the nurse, we cook food and count carbs, and we learn to count. Yes, I like these lessons.” (B)

“There are also educational programs, sensors, they speak about technologies. Little children draw and count carbs <...> Tables to colour, what a good glucose is, like a traffic light to small children, or to draw.” (F)

“Well, there are a few procedures in the morning, that's all, there's no more, so there are actually no procedures, sometimes there are some activities or lessons, they speak about diabetes mellitus.” (A)

The research found that health camps hold classes aimed at developing disease management skills: a diabetologist nurse develops health competence by advising and demonstrating how to count carbs in food and what dishes to cook so that children with diabetes would eat healthy. Methods that develop creativity are also carried out during classes for smaller children (by drawing or colouring, children receive information through play). Strenuous activities are also carried out in health camps: games, educational programs, trips, during which children can also develop social skills. Therefore, in health camps children with diabetes mellitus acquire health competence knowledge and skills: disease management (learn how to count carbs in food, monitor blood sugar levels), healthy lifestyle

(children are encouraged to eat healthy and be physically active, i.e. in outdoor games). Children form a value attitude towards health, and that they themselves are responsible for it. Moreover, having sufficient information and skills, knowing how to properly manage the disease, children contribute to improving their health and controlling the disease. There are certain procedures carried out in health camps that help the child to maintain/restore one's state of health.

The analysis of the research results highlighted **activities and means used for the development of health competence, which are interesting and attractive to children with diabetes**. Various strenuous activities and mobile devices that are exciting to children and stimulate their interest, are used for the development of health competence in the environments of medical institutions, summer camps and health camps, which means that children get actively involved and develop health competence (Fig. 2).

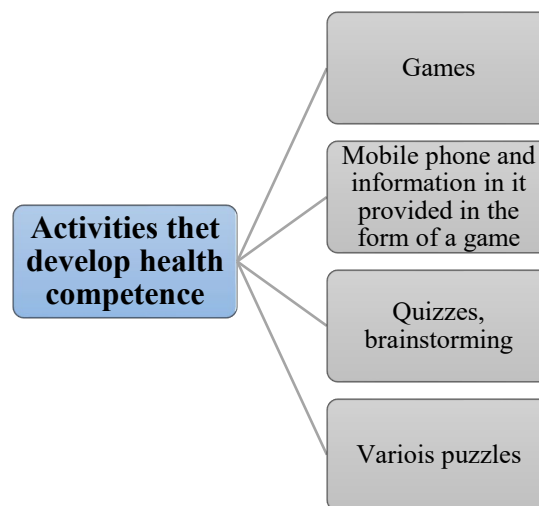


Figure 2 Classes and activities for the development of health competence in children with diabetes

The research also showed that children with diabetes mellitus would like to have information and skills on diabetes delivered through a wider range of educational activities and mobile tools. Having analysed the responses of research participants, it is possible to divide educational activities/classes into two groups: **game-like activities and strenuous activities**.

Some of the *focus* group discussion participants emphasized that they would be interested in participating in such activities, in which health competence would be developed through a game. The following is especially true for smaller children:

“Well, I think we need more games, I mean not just games, to play something, for example, like competitions or something, but presentation of information through the form of a game, I think it would be more interesting and maybe a bit different.” (A)

“Well yeah, especially, for example, for smaller children, who come, because, for example, those who start going to school, it’s more difficult for them. Well, not all, for example, parents can always go to school and monitor what they eat, so it’s not that interesting to them and so they don’t really learn how to count carbs, so I think, those who are older, they can sit through and listen and write down everything, so the smaller ones need something different or games, or other activities.” (C)

The research found that it is important to rouse the curiosity of smaller children, to include educational methods in the form of games, with the help of which the knowledge, skills and value attitudes of health competence would be conveyed. Hence, it is important to select age-appropriate activities for smaller children when imparting knowledge about nutrition, foods, and especially how to count carbs in foods. The author emphasizes that education of a child requires to excite and involve one into the educational process, and when developing healthy lifestyle skills it is recommended to use methods of critical thinking, because the following methods help the child realize that healthy lifestyle skills contribute to health preservation (Gudžinskienė, 2000, 2013).

The other part of the *focus* group discussion participants mentioned that if **health competence was developed through strenuous educational activities** (puzzles, quizzes, brainstorming), they would participate more actively:

“For example, like a quiz and questions about diabetes, then it would be interesting, it could be presented in a more interesting way, and I think there would definitely be more of those who would want to attend such classes.” (A)

“I think, I would agree with the quizzes too, and in general I really like that kind of games. It would be both fun and, I think, useful, I really think it would be cool.” (D)

“I kind of think, I’d like to solve a crossword related to some topic of diabetes, or, for example, swipe games, well, I mean, various puzzles are also interesting.” (L)

The research revealed that children are interested if health competence knowledge, skills and value attitudes are developed through strenuous activities: puzzles, quizzes and brainstorming.

Having summarized the responses of the *focus* group discussion participants, it can be seen that the development of health competence requires the use of various classes and game-like activities that encourage children to get actively involved and learn (Gudžinskienė, 2000, 2013; Ivaškiene & Malinauskienė, 2021). The classes and activities used have a significant impact not only on the process of the development of health competence and the interest of children with diabetes mellitus, but also the assimilation of information and the development of practical skills and value attitudes. With the help of strenuous activities and game-like methods, it is possible to achieve a better control of diabetes, because by more actively participating in the development of health competence, children acquire

new knowledge and skills, and supplement the knowledge and skills they already have.

Disease-related health competence is important for good disease control and health preservation, thus it is important to analyse the need for health competence acquisition in children with diabetes.

Conclusions

The research revealed that various educational methods and activities aimed at developing health competence are applied to children with type 1 diabetes mellitus in non-formal educational environments (medical institutions, summer camps and health camps). The following activities and classes are used in the environment of medical institutions: classes, conversations, filling in questionnaires, surveys about diabetes, and their discussions, as well as games. Activities used in summer camps are as follows: walks, cycling, games intended to develop physical activity skills and form the value attitude that sports and active physical activities improve the state of health. In the educational environment of health camps, the following educational methods and activities are used for the development of health competence in children with type 1 diabetes mellitus: lessons, games, educational activities, trips and creative activities.

The research showed that children with type 1 diabetes mellitus for the development of health competence in non-formal educational environments would like to have more game-like activities – age group games and active educational activities – puzzles, quizzes, brainstorming, which would help to be active and develop.

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