Development and support of health competence at school: experience of children with type 1 diabetes mellitus

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Abstract. The aim of the research is to reveal opportunities for the development of health competences at school based on the experience of children with type 1 diabetes mellitus. Empirical research revealed that some children with diabetes mellitus do not receive teachers' help in the development and maintenance of health competence; moreover, they face challenges related to teachers' behaviour with the child. Firstly, teachers do not know much about type 1 diabetes mellitus and its management, which creates situations that are dangerous to the child's condition; they ignore the need of diabetic children to monitor their insulin level and they do not trust children when they say that they have to withdraw from activities to control the disease. Second, teachers are unable to select appropriate information about the types of diabetes mellitus on the internet and that makes it difficult for teachers to understand this chronic disease. **Keywords**: type 1 diabetes mellitus, teachers, educational environment, children

1 Introduction

Children with type 1 diabetes mellitus spend a large part of their time in the educational environment of the school. Therefore, the development of health competence is inseparable from it. Foreign authors emphasise that there is a lack of empirical studies that analyse how good children with diabetes mellitus are at managing the disease in the school environment and what challenges they face when there [1,2]. Despite advances in treatment, most children with diabetes in the US fail to ensure the proper management of the disease. In the absence of a balanced healthy diet, prescribed medication and when blood glucose levels fluctuate, children's health and lives are in danger [3]. Diabetes educators, who are trained in how to deal with a child with diabetes mellitus, can help the child to manage the disease in the school environment. Authors worldwide note that the successful management of diabetes in school requires continuous cooperation and communication between the school community, parents and health professionals/diabetes educators [1]. Self-help meetings are very important in schools, as educators and teachers can learn to help the child to manage the disease in the school environment and, therefore, contribute to the development of health competence. The knowledge and readiness of teachers to help a child with diabetes mellitus can influence the child's grades and desire to attend school because the child needs to feel safe and know who can help them in a critical situation. Moreover, the management of hyperglycaemia and

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hypoglycaemia at school is essential for the child's successful learning process and academic achievements [4]. Thus, one of the solutions that help both the child and the school community to manage the disease is the help of diabetes mellitus educators. These specialists can facilitate the essential care and safety of students with diabetes at school. Researchers emphasise that the educational environment of the school can contribute to the development of health competence (disease control and successful child's involvement in school life) [1,4]. The main aspects of health competence, which are important in the educational environment of the school, are: independence skills, positive experience at school, glycaemic control and safety, normal school attendance and stress-free learning [1,4].

The educational environment of the school can contribute to the development of health competence (disease management and successful involvement of the child in school life) [1,4]. Hence, the school environment is important for the safe and effective management of diabetes mellitus, but a certain level of input is required (informing and providing knowledge to teachers and other school staff about diabetes). Although health professionals take care of the child's health at school, the teachers are the closest to the child during the lessons and must enable the child to take care of their health and provide the necessary assistance. The school community that has sufficient knowledge and competencies can provide support and ensure a safe school environment to children with diabetes mellitus [1].There is a public health care specialist working in the Lithuanian educational institutions, whose functions include collecting and analysing information about the health status of children, informing educators, participating in the implementation of the health education programme, protecting and strengthening children's heath, maintaining a safe health environment and supervising the procedures for organising children's meals; accordingly, the public specialist is concerned with the child's health preservation [5]. However, when it comes to the development of health competence of children with diabetes mellitus (specific knowledge, skills and attitudes), it is not carried out by public specialists at school, but rather by the diabetes organisation and the Lithuanian University of Health Sciences, which launched the 'Diabusas' project in 2021. Unfortunately, it should be noted here that there is still a lack of specialists in the school environment who can help the child manage the disease and provide the necessary support. Due to ignorance or lack of knowledge about children with diabetes mellitus, teachers are unwilling or afraid to help children. Therefore, parents have to take care of their child's well-being alone until their children learn to take care of their own health. Therefore, the teachers' knowledge and readiness to help the child with diabetes mellitus can affect the child's grades and willingness to attend school, since it is important for the child to feel safe and know who can help them in a critical situation.

A question that implies a scientific problem here is: How do teachers (not) contribute to the management of diabetes mellitus in children at school?

Accordingly, the following article seeks to reveal the experience of children with diabetes mellitus in cooperation with teachers in an educational institution in answering: How does a child with diabetes mellitus feel at school? Do they feel safe? What challenges do they face in managing diabetes mellitus at school?

Research object: opportunities for the development and support of health competence at school.

Research aim: to reveal the opportunities for the development of health competence at school based on the experience of children with type I diabetes mellitus.

Research methods: theoretical – analysis, comparison and generalisation 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 does a child with diabetes mellitus feel at school? How safe do they feel?
2. How do teachers help children with type 1 diabetes manage the disease?

3. What challenges does a child face in controlling diabetes mellitus while at school?

2 Research methodology

The qualitative research type was chosen for the study. The purpose of a qualitative study is to disclose the experiences of children with diabetes regarding the acquisition of opportunities for the development of health competence at school based on the experience of children with type 1 diabetes mellitus [6].

The method of a semi-structured interview was used in the research. The following article overviews the problematic question of the research: 'How do you manage or control your disease? Where did you get the necessary information from regarding this disease and its management?'

Targeted selection of the study participants was used in the study. The study employed criterion sampling of the study participants. The method of criterion sampling is effective because it assists in collecting high-quality data [8]. The participants of the study were selected 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 discovered the disease at least one year ago. The study was conducted in August 2021. The duration of the interview was 120 minutes. Seven children with diabetes mellitus participated in the qualitative research. The age of research participants ranged from 8 to 15 years old. There were 5 girls and 2 boys who participated in the research.

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 [6].

The content analysis is a valid method for making specific inferences from the analysed text.

The parents of the children who participated in the research as well as the children themselves familiarised themselves with the goal of the research, the interview questions and the importance of thoughtful reflection on their experience. Parental consent was obtained for all the research participants, allowing their children to participate in the research, including the agreement of the parents and children to record the interview with a voice recorder. During the research, there were the following essential principles of research ethics [7]: **a right to be protected from harm**, i.e. not making any negative impact on their physical, mental and social health; **a right not to be abused** by ensuring that the participation of the research participants and the information provided to them will not be used against them; **usefulness of the research** – the research participants willingly 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** – the research participants were interpreted as independent persons who were able to control their personal behaviour; every research participant had **a right to make a personal decision regarding whether to participate in the research or not**; **justice** – such factors as the benefit, undue influence or compromise was not used in order to involve the 'necessary' persons in the research; 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 research participants were assured that the information provided during the research (the collected qualitative data) would not be disseminated; the unprocessed information will not be available to any person who is not related to the thesis and, specifically, to the exploratory

part of the study. In order to maintain confidentiality, the participants were encoded in the letters A, B, C, D, E, F and G. This study was exempt from formal ethical review as it did not involve clinical interventions or biomedical procedures. All the participants were fully informed about the purpose and nature of the research and provided their voluntary, informed consent prior to participation. For those participants who were minors, parental or legal guardian consent was obtained, alongside assent from the children themselves when appropriate. The study adhered to institutional guidelines for ethical research conduct in public health.

3 Experience of children with diabetes mellitus with teachers in an educational institution

Diabetes mellitus alters the established family life because it brings additional responsibilities related to the management of the disease and health preservation [8-10]. Having returned to school, the child faces various challenges (disease management, informing the teachers about the disease and being experiencing the behaviour of classmates that is not always pleasant). The findings of the empirical research show that children do not consider school to be an environment for the development of health competence, because there is no contribution to the development of health competence at school. Moreover, research revealed that, at school, children with diabetes mellitus go through different experiences that are not always pleasant.

The analysis of the *focus* group discussion about teachers' support for children with diabetes mellitus in developing and maintaining health competence revealed five topics related to teachers (***inappropriate behaviour of teachers; lack of teachers' knowledge about diabetes mellitus and its management; appropriate behaviour of teachers; the close cooperation between the teachers and the children's parents in order to ensure the proper conditions at school and to notice changes in the child's well-being in time; teachers are interested in ways to control the child's health)*** and eleven sub-topics (distrust of the students; ignoring the student; inability to select appropriate information on the internet and its misinterpretation; lack of information about type 1 diabetes mellitus; teachers take care of the child's well-being; teachers make it possible for the child to eat when their sugar level drops; teachers make it possible for the child to inject insulin; teachers constantly collaborate with the parents of the child with diabetes mellitus; in case of difficulties, teachers search for solutions together with parents; teachers show initiative and willingness to acquire the competence of controlling diabetes mellitus) (Fig. 1).

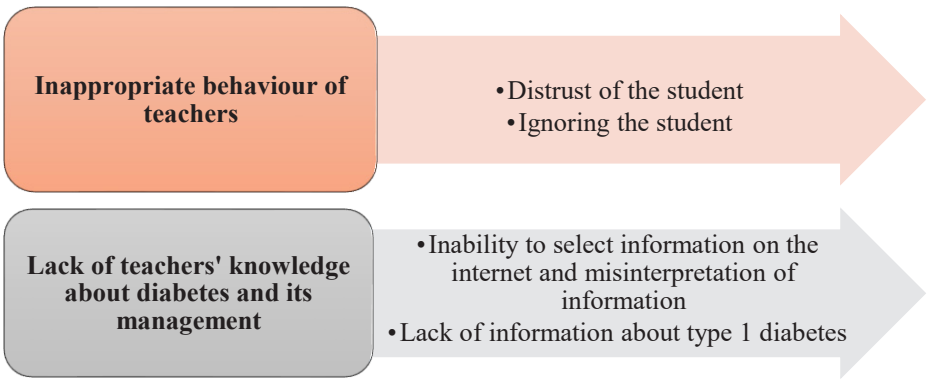


Fig. 1. Negative experiences of children with diabetes mellitus in communicating with teachers at school (compiled by the author on the basis of children's experiences)

Children spend a lot of time at school and, therefore, good microclimate and warm relations with the school community encourage the children to feel good in the school environment and contribute to the maintenance of children's good health [11-14]. Sometimes, however, negative things are also encountered at school. The analysis of the *focus* group discussion revealed that children with diabetes mellitus experience **inappropriate behaviour from the teachers**:

'They always took my glucometer from me because they thought it was a phone. I used to tell them that I have that disease, but they were like: no, it's a phone.' (A)

'They know that I'm sick, but my teachers really don't care. There is one teacher, well, she doesn't mind me measuring my sugar level using my phone. But there was a substitute history teacher, so she started screaming at me, saying: You have a phone, you have a phone, put it in the locker. I explained to her that I have diabetes. And my educator, she has read something on the internet, some nonsense, and we were on a trip, and we were in Kačerginė, and we climbed the hill, and she says: You don't need your phone. But I said: I need to take it to monitor and measure my sugar level. So she said: Don't start with your nonsense, oh well.' (F)

'There were times when I said I need to go outside of the classroom, sometimes I felt bad, they would ignore me and say, stop thinking nonsense, and the like.' (A)

'Well, it used to be the same for me, they said that I apparently wanted to avoid the test and pretend that I felt bad, you would then explain to them that it is because of diabetes, but they didn't understand.' (G)

Accordingly, it can be seen from the experiences of the research participants that teachers do not understand or do not know about the technologies of managing the disease (mobile phones and special devices for monitoring blood sugar). Without the mentioned devices, the child with diabetes mellitus cannot monitor their condition and this can harm the child's health. It also became evident that some teachers ignore the needs of children with diabetes mellitus and consider it as fake excuses.

During the research, **the teachers' lack of knowledge about diabetes mellitus** also became apparent:

'Well, of course, there are a few teachers who have read wrong information. So, during the physical education class, my blood sugar level dropped, and I said that I cannot do sport now, but they didn't understand and accused me of making fake excuses.' (D)

'My educator is such a perplexed grandma and she doesn't know anything, if something happened to me, she wouldn't know what to do, even though I told her, she still doesn't remember, maybe she's afraid she'll do something wrong.' (F)

'It's somehow that teachers are not interested in diabetes at all, at least in my school. They don't want to know or interfere, so I think they wouldn't even know if something were to happen with me.' (A)

'My teacher told me that diabetes is curable, she read about it on the internet. I wanted to tell her that it is incurable, but, unfortunately, she didn't listen to me.' (B)

It can be seen that teachers trust information found on the internet, even when it is incorrect, which forms certain opinions about diabetes mellitus and about its management. Teachers lack information about children with diabetes mellitus and the challenges they have to face, which makes communication between the student and the teacher difficult. Without sufficient scientific knowledge about the management of the disease, teachers do not assess the critical condition of the child as being serious or even life-threatening. The authors emphasise that the successful management of diabetes at school is determined by continuous cooperation and communication between the school community, parents and health specialists [1]. It is also evident that not all teachers want to get involved in the health care programme for students [15]. Some teachers participate in health-promoting events but avoid providing health-related knowledge. Therefore, in this regard, it is important to find the

reasons why teachers avoid providing health competence knowledge, developing health competence skills and forming value attitudes in children.

Nonetheless, the analysis of the *focus* group discussion revealed that not all teachers lack knowledge of type 1 diabetes mellitus (Fig. 2).

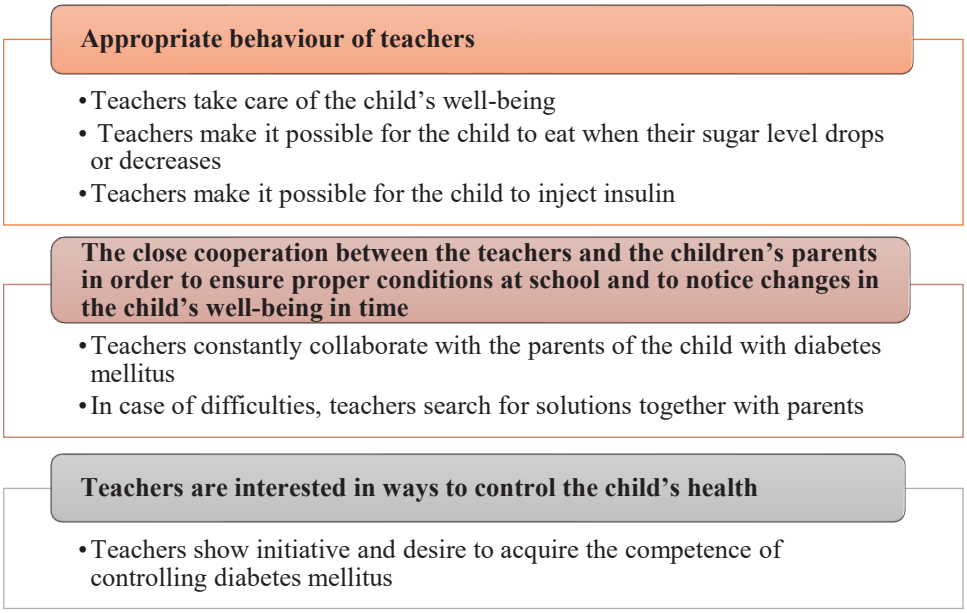


Fig. 2. Positive experiences of children with diabetes mellitus in communicating with teachers at school (compiled by the author on the basis of children's experiences)

There are **teachers who understand and support children with diabetes mellitus:**

'When it was time to go eat lunch, the educator always asked me to measure my sugar level. If the sugar level was high, she immediately called my mother or (name) to make agreements. But I don't know if the fifth-grade teacher will know about this. We'll tell her, but I still have a hard time with diabetes because my last average blood sugar level was 12.5. I'm also allowed to stay in the classroom during the breaks. I also measure myself, and inject everything, and I'm allowed to go to the bathroom, I'm not restricted to do anything, I don't need to write any explanatory notes.' (D)

'Now things are a bit better with the teachers. Well, the teacher has diabetes herself, sometimes the teacher has a lot of emotions, but helps to measure sugar, calls my mother, tells her everything and injects insulin. The teacher tends to cooperate.' (C)

'Everybody, teachers in my school know and somehow everyone in my school react quite well. For example, if my sugar level drops and I don't have anything with me, they always allow me to go, and if I have, they allow me, for example, to have something to eat, that's good'. (F), 'My elementary school teacher asked my parents to come and inform them about type 1 diabetes, to bring information booklets and books to get to know about the chronic disease and how to help me.' (C)

Accordingly, it can be seen that there are also good school examples when teachers/educators understand children with diabetes mellitus and take an interest in the child's disease as well as provide help if needed. Hence, it is important to encourage other teachers to contribute to the development of health competence of children with diabetes mellitus. Such teachers would not only help children to feel safe in their school environment, but it would also contribute to the management of this chronic illness.

Therefore, empirical research found that children with diabetes mellitus face negative experiences in school: teachers' indifference and apathy in terms of the disease. However, there are also good examples of when teachers are happy to communicate and cooperate in order to impart health competence knowledge to children with diabetes, develop health competence skills important for better management of the disease and form value attitudes in children that health is the greatest value. The literature emphasises that teachers' knowledge and readiness to help the child with diabetes affect the child's grades and desire to attend school, as the child needs to feel safe and know that someone can help them in a critical situation [16].

4 Discussion

The scientific literature, which discusses the problems faced by children with diabetes mellitus, mainly focuses on medical issues (treatment, monitoring of glucose levels, nursing), with attention also being paid to the psychological aspects (overcoming stress and anxiety, psychological help for children and their parents). The following topic, however, has been studied rather limitedly from an educational point of view. Even though there are studies that analyse the necessity and benefits of education for children with diabetes, there is still a lack of works revealing how the health competence development process is carried out and what the health competence development environments are. Children with type 1 diabetes spend a large part of their time in the educational environment of school; thus, health competence development is inseparable from school. The research revealed that the school environment is not conducive to developing health competence for children with type 1 diabetes, and both children and their parents do not feel safe. Other authors have noted that teachers' readiness to help a child with type 1 diabetes mellitus creates a positive and supportive school environment [4].

Another apparent dilemma is that children are faced with negative experiences in the school environment: first of all, with the inappropriate behaviour of teachers. Teachers do not trust the student and ignore them when the student says that they need to inject insulin at a specific time. Accordingly, children with type 1 diabetes mellitus cannot trust teachers and understand that, in case of an acute situation related to the disease, they will not receive help from teachers. However, a number of Lithuanian and foreign authors emphasise that the relationship between the school community and students must be warm and friendly, which promotes well-being in the school environment and contributes to children's health and well-being. [11,15]. Other authors note that close relationships with school personnel, training and collaboration are essential for the optimisation of diabetes control and children's safety at school [2].

The research revealed that teachers do not have enough knowledge about diabetes mellitus and its control. First of all, teachers lack information about type 1 diabetes mellitus, and, second, as shown by the research results, teachers are unable to choose the right information: For example, they 'confuse' the types of diabetes, and they misinterpret the information they read. Other authors [18] also note that teachers do not have enough knowledge and skills to help a child control the disease well in the school environment; thus, training is needed not only for teachers but also health professionals. The result is that teachers' lack of understanding and knowledge makes the sick child feel insecure and misunderstood. The school environment will become an environment for the development of health competence for children with diabetes only when teachers and health specialists have sufficient knowledge about the control of the disease and are properly prepared; therefore, it is very important to reveal the motivation factors that would involve teachers in helping the child [19-20]. A child with diabetes must be given opportunities to control the disease in the

school environment; however, without the involvement of teachers and other professionals, it becomes difficult to do so [1].

The research results revealed that there are still teachers who want to help the sick child and are interested in the child's disease. Thus, not all teachers ignore a child with diabetes. They treat the child in a friendly manner and are interested in type 1 diabetes mellitus, communicate and collaborate not only with the child, but also the child's parents on the control of the disease. While conducting research on the readiness of elementary school teachers to help the child, other authors [20], however, found that it is rather difficult for teachers to help the child control their disease because they felt unprepared, lacked information and there was a lack of communication and cooperation with the child's parents. Therefore, the provision of teachers and the entire school community with quality training as well as the involvement of parents can encourage teachers to get involved in the process of controlling the child's disease.

5 Conclusions

The research revealed that children do not consider school to be an environment for the development of health competence, and they believe that school does not contribute to its development. The research found that children find the support and help of teachers and their educators important, but they do not receive help or support from teachers working in the educational institution, children feel unsafe and the management of their disease worsens. The research also revealed that there are certain educational institutions where teachers try to help children with diabetes mellitus, help control their disease at school, provide the necessary conditions to measure blood sugar and inject insulin when needed as well as closely work with both the child and the child's parents, thus contributing to the development and maintenance of the health competence of a child with diabetes.

However, the research showed that some children with diabetes mellitus not only do not receive help from teachers in developing and maintaining health competence, but also face challenges related to the inappropriate behaviour of the teacher towards the child. First, the teachers do not understand what type 1 diabetes mellitus is and how it is managed. There are situations, therefore, that are dangerous for the child's condition: When teachers ignore the children's needs to monitor blood glucose as well as when they do not believe it when children say they need to withdraw from the present activities immediately and control the disease. Secondly, teachers are not able to select appropriate information about the types of diabetes mellitus on the internet, and that makes it difficult for teachers to understand this chronic disease and, therefore, they do not assess the child's critical condition as serious or even life-threatening.

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