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# DIABETIC PUPIL IN CLASS – HANDBOOK FOR ELEMENTARY SCHOOL TEACHERS

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***Abstract****:The frequency of Diabetes mellitus has sharply increased recently. Consequently, there is a high probability that teacher meets a diabetic pupil in the class. The questionnaires were distributed among teachers from selected elementary schools. The questions were put to find out what kind of knowledge teachers have about this disease. The aim of this task was to learn about the teachers' ability of helping the pupil who fell into a diabetic coma or who has a more common complication connected to this disease. The questionnaire replies showed that teachers would welcome a short information handbook with reference to the actual situation of a diabetic pupil in the class. On the basis of these requests the handbook was written. It explains teachers the everyday reality that the diabetic child has to cope with. The aim of the information is to get teachers know how to react to possible urgent complications and how to involve the child in school activities.*

***Keywords****: diabetes mellitus, pupil, elementary school, teacher, study, questionnaire, handbook*

## Introduction

Diabetes mellitus is still an incurable illness threatening children and adolescents. Diabetes is often considered by public as an illness of elderly generation that in most cases can be cured by diet or by a combination of diet and medicaments. Diabetes in children, however, is a totally different illness, the cause and the course of the illness differ and the child is permanently obliged to receive insulin in injections. In the republic there are about 2,000 children who have to cope with the illness and learn how to live with it. A very important role is thus played by the education both of the patient and particularly of the family and school. If the closest family members are not informed properly and in time about possible complications, they cannot help correctly and in time and might endanger the life of the diabetic or damage his life heavily. The essential goal of the patient becomes a lifelong compensation of diabetes because incorrectly cured diabetes leads to later chronic complications (Kopecký, 1986; Vavřinec, 1995; Vávrová, 2002).

Almost every eighth teacher has a pupil with diabetes in his class in these days and in future the problems with diabetes will be more urgent. Even if the knowledge of teachers has improved in recent 20 years, there is an endeavour of diabetes therapists to implement the issues of chronically ill children into the curriculum of undergraduate teaching program in faculties of education (Podroužková, 1994; Michaličková, 1996; Hlavicová, 2002).

The fundamental and the causes of the disorder

"Even if today diabetes mellitus is usually rated among so-called civilisation illnesses, in fact it belongs among the oldest illnesses known by mankind" (Švejnoha, 1998: 5).

Diabetes mellitus forms a non-homogeneous group of disorders of various aetiology, a common denominator of which is hyperglycaemia – an increase level of sugar in blood, and in its effect glycosuria – finding sugar in urine. This disorder is conditioned by an absolute or a relative shortage of insulin and its decreased effectiveness, and is contributed by a complex failure of metabolism of sugars, lipids, and proteins (Středa, 1985; Rybka, 1985, 1988; Blaha; 1999; Anděl, 2001).

Diabetes mellitus Type I (IDDM – insulin dependent diabetes)

The disorder is due to the impact of a selective destruction of Beta cells leading to an absolute shortage of insulin and to life dependence on its exogenous administration.

a) Immunity conditioned diabetes – distraction of Beta cells occurs on the basis of a cell autoimmune process that runs in genetically predisposed persons. The autoimmune process can proceed slowly with a gradual loss of Beta cells. That is the reason why at the beginning the symptoms of ketoacidozis can be missing and the disorder can appear as DM type I. DM type I can appear in any age. The presence of obesity does not prevent the diagnosis of DM type I.
b) Idiopathic diabetes mellitus type I – its aetiology is not known. Clinically the ill persons are totally dependent on the intake of exogenous insulin, they tend to ketoacidozis, there are no detectable marks of auto-immunity.

Aetiopathogenesis of diabetes type I

"In generating diabetes, genetic factor participate in combination with external influence." (Brázdová a kol., 2000: 27). The cause of generating diabetes type I is a congenital deviation of the organism defence ability, immunity system, which can come out after a stimulation of an inductive factor, which can be various infections, chemicals, stress, etc. The inductive factor activates T-lymphocytes that with their cytotoxic impact destroy the Beta cells of pancreas.

Gradually comes to a formation of directed against the own tissue. This process can be in progress for several weeks but also for many years and is denoted as an autoimune destruction of Beta cells of pancreas. " The auto immune destruction can also strike cells of other organs, e.g. thyroid gland, pituitary, blood vessels, etc."(Brázdová et al., 2000: 28).

Presence of diabetes in population (according to Lebl at al., 1998)

Diabetes type I falls upon one of two thousand children and adolescents up to 18 years (in the Czech republic more than 1800 children and adolescents totally). Diabetes type II falls upon almost every the twentieth person. In CR there are half a million people who do not know about their disorder yet. While diabetes type I usually manifests suddenly and its symptoms cannot be overlooked, the diabetes type II can be found out by chance and the disorder need not make any troubles for a long time.

In the occurrence of the diabetes type I there are big differences between the regiones. The highest presence is in northern countries (Finland, Scotland, Sweden) and the lowest presence in the southern ones (Japan, France). Other influential factors are different life conditions and environment, migration and genetic dispositions.

The risk of the diabetes type I genesis *(according to Brázdová, et al., 2000)* in common population is 0.4 %. If mother suffers with the illness, then the child is endangered in 3 %, if the father is ill, then the danger is 8 % and if both parents are ill, then the transfer risk is 30 %.

## Methodological notes

The goal of the pilot investigation was mapping the amount if information of pupils on the diabetes type I, their reactions and possibilities of helping an ill person. Another goal was to design a methodological handbook for teachers who have diabetic pupils.

The information from pupils was collected by means of an anonymous non-standardised questionnaire of 10 items, 6 of them were of close-choice character, 1 half-closed and 3 answers were open. The questions were focused at the information sources on diabetes, at the causes and symptoms of diabetes and at the first aid actions.

The data were collected in two randomly chosen elementary schools in Brno region. Pupils in 5 classes of 8$^{th}$ and 9$^{th}$ grades were questioned. The investigation was performed during May 2006 with the participation of 109 responders, 55 girls (50.5%) and 54 boys (49.5%). Their average age was 14,32 years ± 0.67 years.

The data were processed by the help of EpiInfo programs (Dean a kol., 1994–2004) and Statistica for Windows (*StatSoft Inc.,* 2000–2005). Test $x^2$ was used in the bi-variation analysis.

## Results of the pilot investigation

The results were presented in a table form (absolute and relative numbers/ frequency) and a commentary in words. A sum of 109 pupils filled in the questionnaire. The set consisted of 55 girls (50.5 %) and 54 boys (49.5 %).

Table 1: Survey of answering the question ”Who was the first to tell you about the illness called “diabetes”?

| Answers | Absolute number(n) | Relative number (%) |
|---|---|---|
| Teacher | 35 | 32,1 |
| Parents | 58 | 53,2 |
| Schoolmate/friend | 3 | 2,8 |
| Physician | 2 | 1,8 |
| Someone else | 11 | 10,1 |

Pupils most frequently put in their parents, in total 53.2 %. On the second is the teacher with 32.1 % and in the category Someone else were put in grandparents. A schoolmate or a friend and a physician were put in five cases only.

Table 2: Survey of answering the question “What is typical for children diabetes?”, the whole set

| Answers | Absolute number(n) | Relative number (%) |
|---|---|---|
| Whole-life taking insulin in medicaments | 24 | 22,1 |
| Whole-life taking insulin in shots | 54 | 49,5 |
| Total ban of sweet food consummation | 31 | 28,4 |

From the offered possibilities the pupils chose the right answer in 49.5 %. The number of the other two remaining possibilities is relatively high, of course.

Table 2a: Survey of answering the question “What is typical for children diabetes?”, according to gender

| Answers | Girls (%) n=55 | Boys (%) n=54 |
|---|---|---|
| Whole-life taking insulin in medicaments | 27.3 | 16.7 |
| Whole-life taking insulin in shots | 40.0 | 59.3 |
| Total ban of sweet food consummation | 32.7 | 24.0 |

Table 3: Survey of answering the question " What is the insulin?"

| Answers | Absolute number(n) | Relative number (%) |
|---|---|---|
| Substance decreasing the sugar level in blood | 79 | 72.5 |
| Substance decreasing the sugar level in blood | 17 | 15.3 |
| I do not know | 13 | 11.9 |

The answer to the question "What is the insulin?", was in most cases correct (in 72.5%). Differences between girls and boys were minimal.

Table 4: Survey of answering the question "What is glucagon?"

| Answers | Absolute number(n) | Relative number (%) |
|---|---|---|
| Substance decreasing the sugar level in blood | 18 | 16.5 |
| Substance decreasing the sugar level in blood | 55 | 50.5 |
| I do not know | 36 | 33 |

The pupils in 51 % chose the right answer but they were not too sure about it. In 33 % they answered "I do not know, which is a relatively high number. Differences between girls and boys were minimal.

Table 5: Survey of answering the question "Do you have school mate, a friend who has diabetes?"

| Answers | Absolute number(n) | Relative number (%) |
|---|---|---|
| Yes | 17 | 15.6 |
| No | 92 | 84.4 |

Seventeen pupils (15.6 %) put down that they have a school-mate or a friend suffering from diabetes. Therefore it would be surely useful for them to be more informed about the illness to be able to help in case of some urgent complication.

Table 6: Survey of answering the question "Did you get any information materials on diabetes at school?", the whole set

| Answers | Absolute number(n) | Relative number (%) |
|---|---|---|
| Yes | 19 | 17.4 |
| No | 90 | 82.6 |

In total 19 pupils (17.4 %) received some information material on diabetes. The rate of information of pupils should be substantially higher. In every school there should appear brochures, leaflets or posters highlighting particularly possible emergent complications of a diabetic as, e.g.. hypoglycaemia. It is important to recognise the symptoms and to know how the ill person should be properly helped. If there is a diabetic in the classroom, all classmates should be properly instructed.

Table 6a: Survey of answering the question "Did you get any information materials on diabetes at school?", according to the gender

| **Answers** | **Girls (%) n=55** | **Boys (%) a=54** |
|---|---|---|
| Yes | 25.5 | 9.3 |
| No | 74.5 | 90.7 |

As to the gender more positive answers were given by girls (in 25.5 %) than by boys (9.3 %). The difference is statistically significant on 5 % significance level (p=0,0259; $x^2$ test).

Table 7:Survey of answering the question "If you got any information materials on diabetes, write down what it was (e.g. leaflet, article in a magazine, book – if you remember, put down the name of it) and who gave it to you."

| **Answers** | **Absolute number(n)** | **Relative number (%)** |
|---|---|---|
| Magazine | 7 | 36.8 |
| Leaflet | 7 | 36.8 |
| Book | 4 | 21.1 |
| Internet | 1 | 5.3 |

The source of information on diabetes most frequently were a magazine and a leaflet, both in 36.8 %, after that a book in 21 % and Internet in 5.3 %. The pupils did not tell the name of the book or the magazine or the source of the information material.

Table 8: Survey of answering the question "How can a shortage of sugar (hypoglycaemia) in a diabetic person show up?", the whole set

| **Answers** | **Absolute number(n)** | **Relative number (%)** |
|---|---|---|
| Paleness | 1 | 0,9 |
| Head ache | 2 | 1,8 |
| Sickness/weakness | 8 | 7,4 |
| Sweating | 2 | 1,8 |
| Change in behaviour | 2 | 1,8 |
| Black-out | 14 | 12,9 |
| I do not know | 80 | 73,4 |

In total 80 pupils (73.4 %) did not know how hypoglycaemia can show up in a person. From correct answers the most frequent was a black-out (12.9 %), which is a manifestation of heavy hypoglycaemia, and sickness or weakness (7.4 %). The other types of manifestation were mentioned in one or two cases, only.

Table 8a: Survey of answering the question "How can a shortage of sugar (hypoglycaemia) in a diabetic person show up?", according to the gender

| **Answers** | **Girls (%) n=55** | **Boys (%) n=54** |
|---|---|---|
| Paleness | 1,8 | 0,0 |
| Head ache | 3,6 | 0,0 |
| Sickness/weakness | 10,9 | 3,7 |
| Sweating | 0,0 | 3,7 |
| Change in behaviour | 3,6 | 0,0 |
| Black-out | 14,6 | 11,1 |
| I do not know | 65,5 | 81,5 |

Girls were more successful in the answers. In total 19 (34.5 %) knew the correct answer. Ten boys (18.5 %) who responded, mentioned only 3 correct possibilities: sickness, weakness, sweating and black-out. The difference in the sum of correct and faulty answers according to the gender is on the edge of statistical significance ($p=0.0583$; $x^2$ test).

Table 9: Survey of answering the question "What would you do if your diabetic classmate, friend were loosing consciousness because of heavy hypoglycaemia? Can you help him somehow by yourself?

| **Answers** | **Absolute number(n)** | **Relative number (%)** |
|---|---|---|
| Give sugar | 13 | 12,0 |
| Give something sweet | 8 | 7,3 |
| Call a physician | 33 | 30,3 |
| Call help | 12 | 11,0 |
| Call the parents of the stricken | 1 | 0,9 |
| I do not know | 42 | 38,5 |

As to the ability to help the person who is loosing consciousness due to heavy hypoglycaemia, 42 pupils (38.5 %) answered " I do not know". Those who reacted would most frequently call a physician (in 30 %) and also give the patient sugar (12 %) or something sweet (7.3 %). 12 pupils (11 %) would call another person for help and one (0.9 %) would call the parents. In several cases there was also an incorrect answer "to give insulin to the patient", which would be a fundamental mistake that would worse his state even more. The answer "to administer glucagon to the diabetic person" did not appear at all. There were no substantial differences in the answers between the genders.

Table 10: Survey of answering the question “Would you like to know something more about diabetes?”, the whole set

| Answers | Absolute number(n) | Relative number (%) |
|---|---|---|
| Yes | 65 | 59,6 |
| No | 44 | 40,4 |

More than half of the questioned (59.3) answered positively. The reason was, beside others, that they did know how to help a person who was loosing consciousness due to hypoglycaemia.

Table 10a: Survey of answering the question “Would you like to know something more about diabetes?”, according to the gender

| Answers | Girls (%) n=55 | Boys(%) n=54 |
|---|---|---|
| Yes | 76.4 | 42.6 |
| No | 23.6 | 57.4 |

Among the answers classified according to gender, a highly significant difference was found on the level of 0,1 % (p= 0.000327; $x^2$ test). In girls there were 76.4 % of those who wanted to know more about the illness. The boys wanted to get more information in 42.6 % only.

## Discussion

From the pilot investigation presented here it is not possible to make generalising conclusions due to a small sample and a limited choice. But it can be a base and an impulse in organising representative studies on the issues of children diabetes and the knowledge of it.

It was our aim to address the children of out-of-Brno schools in order to find out what is the knowledge and information of pupils of the 8$^{th}$ and 9$^{th}$ grades of basic schools in a village and provincial environment on diabetes. The authors presupposed that the Brno pupils have better knowledge of diabetes, have more possibilities to meet their peers suffering from it and that the offer of literature and educating materials in Brno should be wider and richer.

Another theme for realisation, besides the investigation in a representative sample, can be a comparison of the state in a big town and in a village (provincial town), or possibly studies from various regiones.

The goal of education is that the child should learn how to co-operate in the therapy and that the adolescent could be able to take the diabetes therapy into his own hands.

The education should start immediately after setting the diagnose. In small children it is possible to exploit the world of fairy tales, to demonstrate vividly what meals are permitted and what meals are forbidden. A school child masters, usually with interest, how to test urine and comprehends that the content of sugar in blood can be decreased by insulin administration, that the amount of sugar in urine is reflecting the amount of sugar in blood and that it is necessary to modify the doses of insulin. From the age of 8 a pupil can apply injections by himself, from 12-13 he is able to master the instructions on modifying the insulin doses, everything in practical way (Dub, Brožek, 1983; Kopecký, 1986; Lebl, 1998; Hlavicová, 2002).

A unique school of diabetology for children and adolescents are summer or winter recreationally educational dia-camps. There the children learn how to master diabetes in a serious and entertaining way, theoretically and practically. At the end of the stay everybody takes insulin shots by himself, they know how to answer correctly questions like: "How to recognise hypoglycaemia?", "What must be done in the state of hypoglycaemia?", "What is the glucagon?". A proper dia-camp includes: early-morning reveille, urine testing, insulin ordination**,** insulin shots before breakfast (and before supper), morning warming-up, competitive games, camp log and many other activities.

Dr John, a Czech-American compatriot, was among the first in the world who gave rise (from his own means) to such a summer camp in the woods near Cleveland in 1930. In Europe the first summer camp for diabetic children was held in Czechoslovakia in 1930 (Škvor, 1995; Etzwiler, 1994).

The number of diabetic children is growing and that is the reason why the authors of this paper, besides the investigation, designed a handbook for teachers of diabetic children that would help clear the facts connected with the illness. Similar handbook should be at hand in every school in every classroom so that the pupils could know how to help a diabetic school-mate or friend. Help in proper time and in a proper way can save a diabetic person his life when he falls in unconscious.

## Conclusion

A the framework of the study an anonymous questionnaire investigation was done on the sample of 109 pupils of 8$^{th}$ and 9$^{th}$ grades in 5 classes in 2 out-of-Brno basic schools. The questionnaire had 10 items and was directed at fundamental knowledge of diabetes of children and youth, on information sources and on the possibilities how to help a school-mate in need.

The children get most information about diabetes from their parents (half of the sample) and from teachers (a third). Half of the children connect the juvenile type of diabetes with insulin shots, the correct answer was chosen by more boys (60 %) than girls (40 %) but the difference is not statistically significant. Three quarters of the questioned know what insulin is, a half know glucagon.

Approximately 16 % children know a peer with diabetes, only 17 % of the sample met any information material about diabetes, girls substantially more ($p<0.05$). The most frequent source of information were magazines and leaflets, less frequent were books and Internet.

As a warning should be considered the fact that three-quarters of children did not know by what symptoms hypoglycaemia can be manifested in a person. Among the correct answers

The most frequent were black-out, sickness and weakness. One third of the girls were able to classify the hypoglycaemic symptoms, in boys only a fifth, the difference between the genders is at the edge of statistic significance of 5 %. Approximately 40 % of the questioned did not know how to behave in the case that their peer would be stricken by heavy hypoglycaemia. Those who reacted somehow, would most often call a physician (30 %) or another person (10 %), or would hand the patient sugar or something sweet (20 %). There were no significant differences between the genders.

As much as 60 % of the sample wanted to get more detailed information on diabetes, substantially more girls (76 %) than boys (43 %), $p<0.001$).

## Transfer to teacher's profession

It was shown that in the observed sample was relatively little information on the problems of the juvenile diabetes and the actions of first aid. The children presented their parents and teachers as important information sources. The teachers must be equipped with the most recent knowledge of diabetes to be able to explain the children adequately the issue connected with the rise, symptoms, therapy and routine measures on diabetes and therefore they should be acquainted in their undergraduate program with the fundamentals of diabetology. The methodological handbook designed by the authors can help the teacher in this task.

**Examples from the handbook:**

*1) Handbook contents*

Before you start
Introduction
The principle of diabetes type I
Insulin therapy
    Aids for insulin application
    Aids of the diabetic for self-examination
        Glycaemia measurement
        Profile of glycaemia
        Urine test
Nourishment of a type I diabetic

2) An example from the handbook

**Acute diabetes complications and the treatment of them**

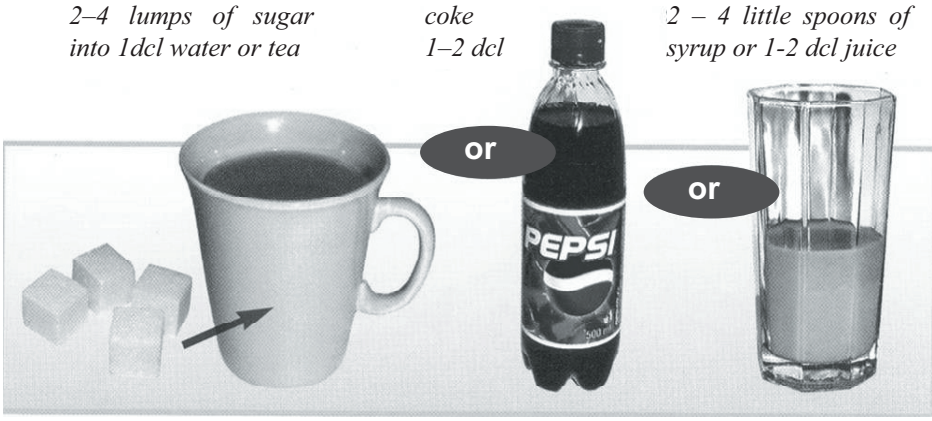
A whole-life task of a diabetic person is to watch the level of glycaemia and thus to omit later complications. The values of glycaemia are given in millimole units in a litre. In a healthy person the glycaemia is between 3.3 $mmol.l^{-1}$ and 6 $mmol.l^{-1}$. Short while after meal it is a little higher but after an hour it drops below 7.7 $mmol.l^{-1}$and the decrease continues down to the watched interval, i.e., between 3.3 $mmol.l^{-1}$ and 6 $mmol.l^{-1}$. If the glycaemia value drops lower than 3.3 $mmol.l^{-1}$, the patient is threatened by **hypoglycaemia.** The brain is not fed enough by glucose, its function starts to decrease. Hypoglycaemia does not rise in a person not suffering from diabetes because his body immediately starts to produce hormones that increase the glycaemia. The symptoms of hypoglycaemia are various and of individual kind. Most frequently: **hunger, palpitation, diplopia, creepy feelings round mouth, frightening dreams, excessive sweating, morning headache.** Hypoglycaemia can also proceed without initial subjective symptoms! A diabetic child passes several hypoglycaemia events during a week but almost all of them come at night without being aware of.

**Causes of hypoglycaemia** (Lébl et al., 1998):

- too much insulin,
- too much food
- more movement than usually
- alcohol

**Mild hypoglycaemia** (Brázdová, 1998)
*Symptoms:* hunger, fatigue, weakness, disorder in concentration, nervousness, sweating, paleness.
*Blood sugar level:* 3 – 4 mmol.l$^{-1}$
*Therapy:* 10–20 g saccharides in the form of pastry, fruit or chocolate

Fig. 1: Therapy of mild hypoglycaemia (Brázdová, 1998)




If a mild hypoglycaemia occurs before the planned dose of meal, it is enough to eat as usually.

In case of light hypoglycaemia, a smaller amount of saccharides must be taken and thus any unneeded increase of blood sugar level will not come.

If hypoglycaemia occurs in the time of fast insulin actuation, it can deepen more quickly and lasts shorter time. If hypoglycaemia occurs in the time of the actuation of insulin with longer-term effect, it proceeds more calmly and lasts longer time.

**Medium hypoglycaemia** *(Brázdová, 1998)*
*Symptoms:* are caused by a lower supply of sugar to the brain and nerves and are influenced by defensive mechanisms of the organism: peevishness or aggressiveness, disturbance of fine mobility – hand tremor, worse articulation, headache, unfocused vision, accelerated pulse rate, palpitation.
Blood sugar level: 3–2 mmol.l$^{-1}$
*Therapy*: 10–20 g saccharides in the form of sugar, syrup (2–4 lumps of sugar, sugar in a liquid state is absorbed more quickly)

Fig. 2a: Therapy of medium hypoglycaemia *(Brázdová, 1998)*

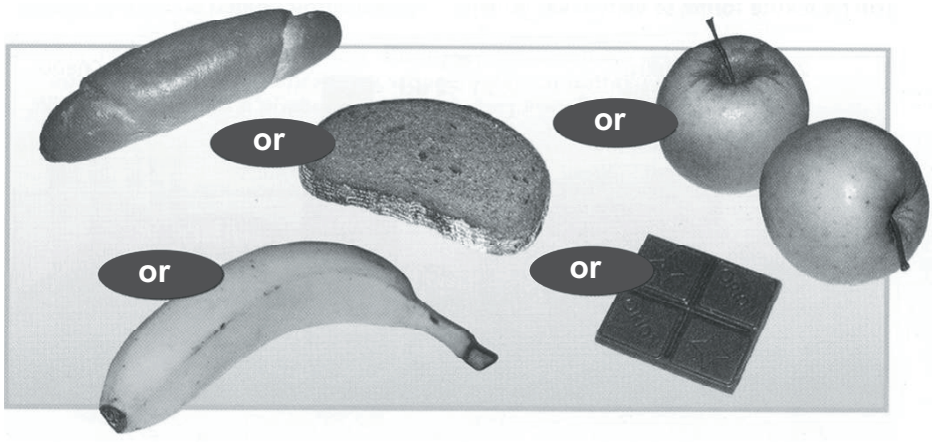
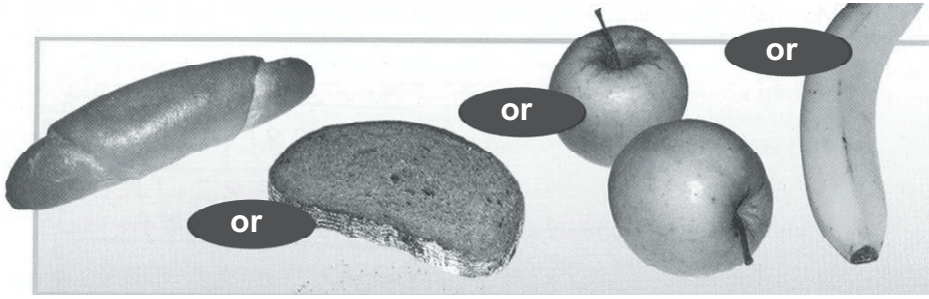



Fig. 2b: Alternative method of therapy of medium hypoglycaemia *(Brázdová, 1998)*



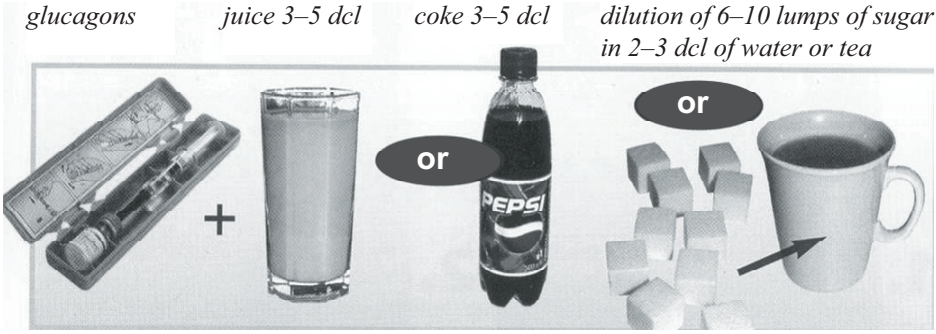

The child should inform about the feelings of hypoglycaemia in case of a worse state! If the symptoms maintain after 10–15 minutes, it is necessary to take sugar again. If the diabetic person feels better, he should eat 10–20 g saccharides in the form of pastry or fruits. If a medium hypoglycaemia occurs before the planned dose of food, then, after calming the symptoms, it is enough to eat something.

**Heavy hypoglycaemia** *(Brázdová, 1998)*
*Symptoms:* are caused by a pronounced shortage of sugar in the nerve tissue and in the whole organism, by a disorder of their functions. These symptoms cannot be evaluated by the ill person but the surrounding people will notice the non-adequate behaviour.

- Need of sleep or aggressiveness,
- Non adequate weeping or laughter,
- Perplexity and co-ordination disorders reminding drunkenness
- Unconsciousness,
- Cramps.

*Blood sugar level:* less than 2 mmol.l$^{-1}$
*Therapy:* depends on the help of another person

Fig.3: Therapy of heavy hypoglycaemia *(Brázdová, 1998)*




The diabetic person must be handed 30–50 g of saccharides in the form of sweet dilutions or syrups orally. If in unconsciousness the patient is not able to receive food orally, we administer glucagon (see further) and in the case of a sweet liquid per rectum.

If no improvement comes after 10 minutes, it is necessary to call emergency ambulance (155), the patient must receive glucose intravenously. If the consciousness improves, he must immediately get 20–30 g of saccharides in the form of sweet liquids. If he feels then better, he should eat 10–20 g of saccharides in the form of pastry.

Heavy hypoglycaemia can pass over to unconsciousness, cramps appear and the life can be imminently endangered. The classmates of a diabetic, especially in higher classes of the basic school, should be well informed what to do in case of hypoglycaemia. It is possible in some of the subjects – health education, family education, biology or physical education - to test how to help a diabetic person in emergency. It is also advisable to place a poster in the classroom with instructions what to do in case of heavy hypoglycaemia.

## Literatura:

1. BLAHA, M. a kol. *Vnitřní lékařství.* Brno: Institut pro další vzdělávání pracovníků ve zdravotnictví v Brně, 1999. 281 s. ISBN 80-7013-274-4.
2.DEAN, A. G. a kol. *Epi Info, version 6: A word processing, database and statistics program for epidemiology on microcomputers*. Atlanta: CDC, 1994 – 2004.
3.DUB, O.; BROŽEK, I. *Cukrovka od A do Z.* Praha: Avicenum, 1983. 292 s. ISBN 08-030-83.
4.ETZWILER, D. a kol. (překlad Bělovská, D.) *Příručka pro diabetiky. Jak dobře žít s cukrovkou*. Ostrava: Sfinga, 1994. 337 s. ISBN 80-85491-72-9.
5.HLAVICOVÁ, G. *Žák s diabetem: diplomová práce*. Brno: PdF MU, 2002.

6.HOUŠTĚK, J. a kol. *Dětské lékařství*. Praha: Avicenum, 1990. 500 s. ISBN 80-201-0032-16.
7.KOPECKÝ, A. *Cukrovka dětí a mladistvých.* Praha: Avicenum, 1986. 110 s. ISBN 08-019-86.
8.LEBL, J. a kol. *Abeceda diabetu. Praha*: Maxdorf, 1998. 170 s. ISBN 80-85800-86-1.
9.MICHALIČKOVÁ, L. *Diabetes mellitus, jako příčina psychosociálních problémů: diplomová práce.* Brno: PdF MU, 1996.
10.PODROUŽKOVÁ, B. *Diabetologie. Vybrané kapitoly z diagnostiky, kontroly a léčby diabetu*. Brno: Institut pro další vzdělávání pracovníků ve zdravotnictví v Brně, 1994. 90 s. ISBN 80-7013-166-7
11.RYBKA, J. a kol. *Diabetologie pro praxi*. Brno: Institut pro další vzdělávání středních zdravotnických pracovníků v Brně, 1988. 156 s.
12.RYBKA, J. a kol. *Diabetes mellitus*. Praha: Avicenum, 1985. 321 s.
13.StatSoft, Inc. *STATISTICA for Windows, version 6 cz*. Tulsa: Statsoft, Inc., 2000–2005.
14.STŘEDA, M. *Diabetologie*. Praha: Avicenum, 1985. 192 s.
15.ŠKVOR, J. Sport při cukrovce. Dítě a diabetes. Příloha k časopisu Děti a my. 1995, č. 4. s. 18 – 21.
16.ŠVEJNOHA, J. *Vítězové nad cukrovkou*. Běstvina: Geum, 1998. 98 s. ISBN 80-86256-00-6.
17.VÁVROVÁ, H. *Dítě s diabetes mellitus v ambulanci praktického dětského lékaře.* Praha: Geum, 2002. 128 s. ISBN 808625626-X.
18.VAVŘINEC, J. Dítě a diabetes. *Dítě a diabetes. Příloha časopisu Děti a my*. 1995, č. 4. s.1.

# DIABETICKÝ ŽÁK VE TŘÍDĚ - MANUÁL PRO UČITELE ZŠ

**Souhrn**: Frekvence výskytu této nemoci zaznamenává již řadu let prudký vzestup. Značně proto vzrostla pravděpodobnost, že se v jedné třídě učitel s diabetickým žákem setká. Učitelům vybraných ZŠ byly nejprve distribuovány dotazníky, jejichž otázky byly konstruovány tak, aby z odpovědí na ně vyplynulo, jaké jsou znalosti učitelů o tomto onemocnění. Úkolem bylo mj. zjistit, zda učitelé jsou schopni pomoci žákovi, který upadl do diabetického komatu nebo kterého potkala jiná - běžnější - komplikace této choroby. Odpovědi z dotazníků ukázaly, že učitelé by uvítali příručku, která by je o tomto onemocnění stručně, avšak kompletně a s ohledem na jejich konkrétní situaci ve třídě informovala. Na základě těchto přání byl proto sestaven manuál, který učitelům vysvětluje většinu skutečností, se kterými se musí diabetik denně vypořádat. Informace jsou podány s tím cílem, aby učitelé věděli, jak správně zareagovat na možnou akutní komplikaci a aby se nebáli dítě zapojit do všech školních aktivit.

**Klíčová slova**: diabetes mellitus, žák, základní škola, pedagog, studie, dotazník, manuál