

## SPECIFIC FACTORS OF QUALITY OF LIFE IN CHILDREN WITH DIABETES MELLITUS

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**Abstract:** *The results of research prove the antagonistic effect diabetes mellitus (DM) on growth and psychosocial functions of adolescents. In children, who suffer from chronic disease, diabetes is significant factor influencing their identity. In these cases, researchers found out higher occurrence of depression and stress, even children's aggressiveness is increasing. The aim of our study was to analyse factors, which are connected with 1 type diabetes mellitus in children, and remarkably effect on their dimensions of quality of life (QL). The main situation where their QL is influenced with DM is school, education process and their effort to integrate themselves in school environment. Children patients have to get used to keeping strict schedule of doses of insulin, eating, self-monitoring, hospitalisations. Changed lifestyle requires exactness, self-discipline and is connected with negative emotions, such as pain, anxiety, fear. Their effective education and psychosocial support from children's doctors and families are necessary. Families have to accept the fact of disease and the plan of families should adjust to actual necessity of children.*

**Key words:** *type 1 diabetes mellitus, quality of life, self-monitoring, treatment of diabetes, school education*

Diabetes mellitus (DM) is significant wide-spread disease, which affect many people. Number of patients with DM is approximately three times more than they were 20 years ago. Many children also suffer from DM. According to National register of patients with 1<sup>st</sup> type of DM, prevalence of children aged 0 – 14 years reached 99.51 ill children/100 000 children in 2008 (NCZI, 2008). Even though incidence of 1<sup>st</sup> type of DM in that age group has more stable character, on contrary to rapid increase in 1990's, doctors warn that 2<sup>nd</sup> type of DM is increasing. These findings in Slovak population correlate with rising of obesity in the whole world. American diabetes association ADA alarm that risk model supposed by 50 % increase in 2<sup>nd</sup> type of DM in pre-school aged children compared with present time.

1<sup>st</sup> and 2<sup>nd</sup> types of diabetes mellitus are etiological different diseases. DM of the 1<sup>st</sup> type is caused by defect of secretion of insulin. Whole-life exogenous insulin

administration is necessary for patients because of absolute insulin deficiency. DM of the 2<sup>nd</sup> type is caused by the defect of insulin efficacy. Disease occurs after long asymptomatic period, more often in adults than in children, and is associated with obesity. In case sufficient insulin secretion, patient can be treated with oral medicines (Vozár, 2004). Diagnoses of 1<sup>st</sup> type DM is usually fast, without warning and means change of life for child and all members of family. Typical symptoms of DM are polyuria, thirst, rapid loss of body weight, and finally ketoacidosis (Rác a spol., 2004). The most typical symptom is strong smell of acetone. Without specialized treatment and exogenous administration of insulin state of the children will finish fatally. Until 1922 medicine was not able to effective cure children with 1<sup>st</sup> type of DM.

Nowadays, children in case good treatment and correction of blood glucose level, have the same chance to live as long as their healthy classmates. True is that patient has to keep a strict every-day timetable. DM makes people have strong discipline and rules. There is a list of specific requests for every-day time table for patients with 1<sup>st</sup> type of DM (Table 1).

Table 1. Specific requests for every-day time table for patients with 1<sup>st</sup> type of DM

Regular use of medicines and insulin application
Use of glucometre, insulin pen, insulin pump
Self-monitoring of blood glucose level, blood press body weight
Education, self-studying about DM
Regular checking in diabetes doctor, examinations in specialized doctors
Keeping diet
Treatment about foot
Regular exercises
Management emotion stress
Management other associated diseases

Except of the necessity to accept their illness, children have to manage ordinary problems of their every-day lives during childhood and adolescent period. On the other hand, acceptance of illness teaches child to eat healthy food and live healthy style of life. The child become little specialist in his trouble and often pass over their mates in intelligence, knowledge about healthy way of life, nutrition. Child often copes with his disease quicker than his parents. Emotion reactions of parents go through various periods (Table 2). During first days after diagnosis of illness parents have to get over psychological stress, which come from finding their child has life-long illness. After getting over the first crisis, the balance period begins. Parents try to take active role in management of their child disease. The family accepts the fact of diabetes mellitus, the whole rhythm of family life adjust to actual necessities of child. This is practically life-long stage (Michalková, 2003).

Table 2. Stages of emotion reactions of parents, after diagnosis diabetes mellitus

<b>Shock</b> with irrational emotions and thinking, parent often react excessively
<b>Denial</b> – they do not want to accept the fact of illness, they try to find “miraculous medicine”
<b>Sadness, anger, anxiety, feeling of guilt</b> – often reactions are feelings of failing, disability, parents feel to be guilty for illness
<b>Balance</b> – feeling of sadness, sorrow decreases. Parents aspirate to manage therapy of illness more actively
<b>Reorganization</b> – family accepts the fact of disease, their whole rhythm adjust actual needs of child.

The main lifelong problem for patients with DM and their families is to accept diagnosis of illness, and find to answer to the question how to live with their disease.

Influence of social and psychological factors on management of DM in children and adolescents is studied in many works and projects. They monitor quality of lives in children with the lifelong disease. There are many questionnaires and measure scales for describing quality of live (QoL). Scales can be divided into groups: general, generic, evaluating general patient’s state not focused to special disease, but mainly special scales for DM. The special scales evaluate effect of DM on physiological, psychological and social aspects of patient’s QoL.

The first studies, which describes problems of young patients with diabetes, were done by Ingersoll and Marrer (1991), measured with Diabetes – Related Quality of Life. Authors adjusted questionnaire Diabetes Control and Complications Trial Research Group to the young age categories.

The new studies include the whole scale of QoL of young patients, monitor the influence of DM on whole family, and level of their metabolic checking. Diagnose of DM in child changes family activities for long time and very often also family’s view on life. Study of Kylie et al. (2004) investigated changes in lives of children patients with 1st type of DM, who suffered from DM more than two years. There were 117 children and their parents included into the trial. In 1998 parents of 5–18 year-old children evaluated QoL of their children before hospitalization on diabetes clinic, they used Child Health Questionnaire PF 50. Children at the age 12–18 years could evaluated their QoL, in Child Health Questionnaire CF-80, by their own. In both groups, level of glycemic haemoglobin as parameter of glycemic control was measured. Measurements were repeated after two years.

In general evaluation of results, different attitudes of parents and their children were found before and after study. Adolescents described significant improvement in family activities ( $p \leq 0.001$ ), getting better in feeling of body pain ( $p=0.004$ ) and also better adaptation to the illness ( $p=0.001$ ) after finishing of study. In scale, which measure their behavior, however, slight diminishing was revealed ( $p=0.04$ ).

Social support and influence of family environment on life with DM observed some more studies. Study in groups of children and adolescents, who suffered from 1st type of DM (Hauser et al. 1990; Schafer et al. 1986), similar to work in adult patients with DM type 2<sup>nd</sup> (Garay-Sevilla a spol., 1995), revealed that better adaptation to the disease is connected with the high support of family rare incidence of big conflicts in

family. Results works asserted association between social support and glycemic control in adolescents (Eaton et al. 1992).

But not in all families, process of adaptation on disease is without problems. Several long-lasting works suggest that diagnose of DM is able to cause severe problems in children lives (Delamater, 1990). Lack of communication, small interest of parents in children troubles, lack of support are narrow connected to weak metabolic control and insufficient glycemic regime. As Kovács (1985) wrote, about 36% of new diagnose of DM in children was associated with psychological problems. Results shew that adolescents with the worse metabolic control had higher percentage of anxiety, lower self-esteem, bigger problems in relationships with their classmates, more depressions, and higher level of stress. Especially girls with DM felt higher level of depression and anorexia. Mental anorexia, bulimia in young girls with DM is three times higher than in group of healthy girls. Ketoacidosis is also the most important lethal factor of the patients with the 1st type of DM.

As is written above, the markable part of the treatment of the young patients is psychological – psychiatric support as individual and family psychotherapy, consultancy and, if it necessary, antidepressive therapy.

In conclusion we can mention, that in case a such difficult, life-long disease as DM the 1st type is, therapy management has to be individually in accordance to needs of young patient and the whole his family. It is always important to prepare patients to do self-management and metabolic controls by their own. This is not possible without thorough education and knowledge of risk factors, which are connected with DM.

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## ŠPECIFICKÉ FAKTORY KVALITY ŽIVOTA DETÍ S OCHORENÍM DIABETES MELLITUS

**Abstrakt:** Výsledky výskumov dokazujú možný „nepriateľský“ vplyv ochorenia diabetes mellitus na vývoj a psychosociálne funkcie adolescentov. Pre deti, u ktorých sa objaví chronické ochorenie je významným faktorom ovplyvňujúcim ich identitu. V týchto prípadoch sa zaznamenáva vyšší výskyt depresí a stresu, ba dokonca sa stupňuje aj detská agresivita. V našej práci sa venujeme analýze faktorov, ktoré súvisia s ochorením diabetes mellitus 1 typu u detského pacienta a ktoré významným spôsobom modifikujú jednotlivé dimenzie jeho kvality života nevynímajúc školu, vyučovací proces a ovplyvňujú jeho začlenenie sa do školského prostredia. Detský pacient si musí zvykať na striktné dodržiavanie režimu, zmeny v stravovaní, denné dávky inzulínu, selfmonitoring, hospitalizácie. Zmenený životný štýl vyžaduje presnosť, sebadisciplínu a spája sa s negatívnymi emóciami ako sú bolesť, strach a úzkosť. Efektívna edukácia a psychosociálna podpora detského diabetika a jeho rodiny je nezastupiteľná. Rodina musí prijať skutočnosť choroby a celý jej chod sa musí prispôbiť aktuálnym potrebám dieťaťa.

**Kľúčové slová:** diabetes mellitus 1. typu, kvalita života, selfmonitoring, diabetická terapia, školské vzdelávanie