Self-evaluation and Self-esteem in Children with Type 1 Diabetes Mellitus

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Original Article

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Abstract:

Background: Diabetes mellitus (DM) is the most common endocrine disease in childhood. The treatment of the disease is complex and includes lifestyle modification, self-monitoring, insulin administration, and regular physical activity. After starting school, children gradually become aware of their differences from their peers, which together with other factors can affect their self-evaluation. Hence, in the present study we focused on the influence of self-evaluation on the degree of

compensation in children with type 1 DM.
Methods: The sample consisted of 64 parents of 6-12-year-old children regularly treated in the Diabetology Outpatient Clinic of the Children's Diabetes Centre. To obtain the data, a self-assessment questionnaire was used; to verify hypotheses, the statistical methods were used: the chi-square test (verifying the relationship between nominal data and verifying the differences between the compared groups); the Student's t-test (comparison of mean values); and the F-test (comparison of variances).
Results: The relationship between children's difficulties at school and occurrence of acute complications was found out in the sample in the present study. The relationship between difficulties at school and frequency of hospitalisations of children with type 1 DM was confirmed.
Conclusions: The present study suggests there is a relationship between difficulties of children with DM in school environment and occurrence of acute complications or hospitalisations of children with DM. Thus, nursing interventions should be aimed at improving self-esteem to achieve the desired compensation of DM.

Introduction

Diabetes mellitus (DM) is defined as a group of metabolic diseases characterised by hyperglycaemia caused by absolute or relative deficit of insulin. The disease can be manifested in any age. The highest incidence in our population is recorded between 9-14 years of age. There has been an increase in the incidence in children from birth to five years of age (1). Diagnosis of the disease brings significant changes to children's lives. The changes influence the children's daily routine significantly, and children are also affected by more frequent separation during hospitalisations, isolation from their peers, and changes in relationships with peers. School-age children with type 1 DM gradually start to compare themselves with their peers and realise they are different, which may influence their self-evaluation (2).

Self-evaluation, as a concept, was defined for the first time by an American psychologist William James in his book "Principles of Psychology", which is considered the first American textbook of psychology by professionals. James characterises self-evaluation as a certain self-image that allows us to appreciate or not appreciate who we are, what we do and what we achieve (3).

Zelina (4) states that self-evaluation is a result of comparing oneself and pronouncing a "judgement" about self, how a person perceives oneself as good or bad, wise or unwise, etc.

Self-evaluation develops and changes continually throughout a person's life. In general, it is high in childhood and decreases significantly with the beginning of adolescence. It is affected by multiple factors including family support, parents' education, economic factors, peer relationships, age, growth, and development (5). However, children's self-evaluation also relates to the fact how their opinions are accepted and how their roles at home or school are perceived (6).

In the present study we focused on identification of effects of self-evaluation on compensation of DM in children.

Sample and Methods

A questionnaire method was used to obtain relevant data about the studied phenomena. We filled in the questionnaire in cooperation with children's parents. The sample included 64 parents of 6-12-year-old children with type 1 DM. The exclusion criteria were insulin pump treatment in the child and an intercurrent disease. The respondents' willingness to participate and

anonymity were respected when filling in the questionnaires. The response rate was 100 %. Statistical methods of quantitative research were used, and the data were statistically processed. To verify the hypotheses, we used various types of statistical tests. The chi-square test was used to verify the differences between the compared groups. To compare cardinal data, we used the F-test, and to compare variances, and the Student's t-test was used to compare mean values. We found out the relationship between the cardinal variables by calculating the correlation coefficient and testing for the nullity of the correlation coefficient.

Results

To find out effects of self-evaluation on compensation of diabetes, we asked the respondents about self-evaluation of their children, and the parents' relationships to their diabetic children.

We analysed the relationship between the parents and their children, and the extent of cooperation between them. The parents were asked

Table 1 Cooperation with children

Cooperation with children		
	N	%
Very good	31	48 %
Rather good	27	42 %
Rather bad	6	9 %
Bad	0	0 %
Total	64	100 %

Table 2 Attitudes towards complying with the treatment regimen

Attitudes towards complying with the treatment regimen					
	Yes		No		Total
	Number	%	Number	%	
Cautions	57	89 %	7	11 %	64
Excessive protection	19	30 %	45	70 %	
Reasoning the decisions	58	91 %	6	9 %	
High requirements	25	39 %	39	61 %	

Table 3 Supporting children's self-evaluation

Supporting children's self-esteem		
	M	SD
Adequate work	3.58	0.79
Being critical towards the child	3.36	0.91
Blaming for failures	3.33	0.77
Criticism of work, not the child	3.30	0.78
Respect	2.59	1.30
Esteem	2.44	1.33
Attention to success	0.98	1.12

to choose one option rating their cooperation with their children.

Almost half of the parents, 31 (48 %), stated that their cooperation with their children was very good. Another group, almost the same size, of the respondents, 27 (42 %), rated their cooperation with their children as rather good. Six (9 %) parents considered their cooperation with their children to be rather bad than good. None of the parents rated cooperation as bad.

Regarding cooperation between the parents and their diabetic children, very good or good atmosphere prevailed between them in their families (Table 1).

We asked the parents which attitudes they used in the attempt to comply with the treatment regimen. They were asked to choose if they preferred each attitude or not.

We found out that the parents, in their attempt to comply with the treatment regimen in their diabetic children, preferred reasoning their decisions, as stated by 58 (91 %) respondents. Almost the same number of the respondents, 57 (89 %), used cautions too. Approximately one third of the parents admitted they also used not very suitable methods in their attitudes towards their diabetic children. Too high requirements for their children were reported by 25 (39 %) respondents; and 19 (30 %) parents protected their children excessively (Table 2).

Children's self-evaluation is significantly affected by their health. They may feel different from other children or even excluded from others because of their disease. Therefore, we were interested in how the parents supported their children's self-evaluation.

The parents from the sample stated most frequently that they gave their children adequate work (M = 3.58). However, we perceive certain shortcomings in the parents in supporting self-evaluation in children with type 1 DM. They largely stated they were critical towards their children and blamed them for their failures. On the other hand, they often did not realise that

Table 4 Children's difficulties

Children's difficulties		
	M	SD
Anger outbursts	2.55	1.37
Self-deprecating	2.17	1.24
Difficulty talking about the disease	1.56	1.31
Sensitive reactions to criticism	1.47	1.38
Child's isolation	1.44	1.41
Child's sadness	1.22	1.32
Does not give an opinion	1.06	1.34

Table 5 Difficulties at school

Difficulties at school		
	Mean	Deviation
Excessive fatigue	1.63	1.34
Difficulties concentrating	1.20	1.24
Rejecting afterschool groups	0.97	1.32
Rejecting common activities	0.81	1.41
Difficulties learning	0.64	1.37
Criticism from teachers	0.45	1.38
Non-acceptance by classmates	0.31	1.31

positive evaluation was important for children. They paid very little attention to children's success (M = 0.98). Showing respect (M = 2.59) and esteem (M = 2.44) towards the child was not a matter of course either. We also studied whether parents' support for their child's self-esteem changed with age (Table 3). We compared the answers about children's age with the answers about support for children's self-esteem. We found out that age of the child with type 1 DM and support of self-evaluation by parents had strong correlation between the studied characteristics. The correlation coefficient was negative (r = - 0.33); thus, it is indirect correlation. It means that the parents supported their children's self-evaluation less as the children got older.

In addition to usual activities that are expected from healthy children, children with type 1 DM must also cope with activities related to compliance with the diabetic regimen. It can cause negative pressure that is manifested by various difficulties. Therefore, we asked the parents which difficulties were manifested in their children and to what extent.

The parents rated anger outbursts as the most frequent difficulty in the children with type 1 DM. The average rating of the degree of this difficulty was 2.55, which can be interpreted as moderate to high level of difficulty. Self-deprecating (M = 2.17) was also a very frequent phenomenon in the children. The children had difficulty talking about their disease to a moderate degree (M = 1.56). Similarly, the difficulties were manifested in sensitive reactions to criticism (M = 1.47), or child's isolation (M = 1.44). According to the parents, sadness and not giving an opinion (M = 1.22 – 1.06) caused the slightest difficulties from the offered options (Table 4). Higher standard deviations were in all the studied items. It suggests that children's difficulties varied. Furthermore, we examined if there was a relationship between age and manifestations of difficulties in children. We compared the answers about children's age and the answers about manifestations of difficulties in children. We verified the validity of relationships by the test for the nullity of the correlation coefficient.

The relationship between age and occurrence of difficulties in children was found out by the statistical tests. Thus, in general, we can state that difficulties occur more often in older children than in the younger ones.

Besides the difficulties that are manifested primarily by behaviour towards close persons in family, or friends, children can experience difficulties at school too. Therefore, in the questionnaire we asked about difficulties that children experienced most frequently at school or among peers.

The parents stated that most of the difficulties at school occurred in their children only to a small extent. According to our findings, excessive tiredness (M = 1.63) caused the largest difficulties to children. Difficulties concentrating (M = 1.20) followed. Rejecting common activities and rejecting afterschool groups by children (M = 0.81 – 0.97) occurred less frequently. Difficulties learning, criticism from teachers, and non-acceptance by classmates (M = 0.64; 0.45; 031) occurred in the smallest extent.

As in the assessment of children's difficulties, higher values of standard deviations are observed also here. Thus, it means that difficulties

Table 6 Relationship between occurrence of school difficulties and hospitalisations of children

Occurrence of school difficulties		
Hospitalised for inadequate compensation		Without hospitalisations for the stated reasons
Mean	7.77	3.04
Variance	18.69	13.04
Number	13	51
T stat	4.05	
T crit	2.00	T stat > T crit
p-value	0.000145	p-value is very low

of the diabetic children at school also occurred in various extents.

We tried to find out if the occurrence of difficulties in school environment related to more frequent hospitalisations due to inadequate compensation of diabetes in individual children. We used the respondents' answers to the questions where the parents stated to what extent their diabetic children experienced difficulties at school and the answers about the reasons for hospitalisations. In the sample, 38 children were hospitalised in the previous year. The parents stated the most frequent reasons for hospitalisation: diagnosis of the disease (17 %); inadequate compensation (16 %); and ketoacidosis (11 %).

We processed the answers to those questions as entering data for the Student's t-test.

The differences in the compared groups are very large and cannot be attributed to random effects. The test results confirm that difficulties at school occurred in the group of the children hospitalised for decompensation much more frequently than in the second group. We found out there was a relationship between the number of hospitalisations due to decompensation in the children and their difficulties at school. Thus, we also focused on detecting a relationship between children's difficulties at school and occurrence of acute complications in the previous two years. We compared the answers from the question about the extent to which the diabetic children experienced difficulties in the school environment and the answers about types of acute complications experienced by the children in the previous two years.

We found out moderate correlation (r = 0,475) between children's difficulties at school and occurrence of complications. The relationship between children's difficulties at school and occurrence of acute complications in the sample was confirmed.

Discussion

Vlachioti et. al. (6) pointed out that parents' education has also influence on self-evaluation in children with type 1 DM. Several studies implied that family plays an important role in compliance with treatment in diabetic children in all stages of development. The family that provides support in coping with a disease relates to a higher level of self-esteem in the child. Furthermore, it was proved that children have higher self-evaluation in the period after being diagnosed because in that time they are supported by the education process and get necessary family and social support. Also, the present study implies there is a relationship between children's age and support for self-esteem provided by parents. We found out that the parents paid less attention to supporting self-evaluation in older children than in the younger ones.

We also studied a relationship between age and parents' attitudes towards complying with the treatment regimen. No relationship was found out in this case.

Several authors studied the impact of the chronic disease on self-evaluation in children. The objective of the study by Vlachioti et. al. (6) was to evaluate negative effects of diabetes on self-evaluation in children and young people. The group of 144 patients with DM was compared with the group of 136 healthy children. The study authors found out that self-esteem in diabetic children was primarily affected by age, level of physical activity, and family support. However, the analysis of the data obtained by them showed that self-evaluation in the children with DM did not differ from self-evaluation in the healthy children. Similarly, Boeger, Seifge and Roth (7) found out that self-evaluation in the young people with type 1 DM and the young adolescents did not differ significantly.

Hoare and Mann (8) studied self-esteem and behavioural disorders in children with chronic diseases. The sample included 8-15-year-old children. The first group consisted of 64 children with epilepsy; the second group consisted of 91 children with type 1 DM. Their study implied that the children with epilepsy had lower self-evaluation and more behavioural disorders than the diabetic children.

In the present study, we asked the parents what difficulties their children experienced at school or among peers. We focused on the existence of a relationship between difficulties at school and children's hospitalisations because of complications. We compared the group of children who were hospitalised because of inadequate compensation with the group of chil-

dren who were hospitalised for other reasons (for example: hospitalisation for diagnosis of DM) or children who were not hospitalised at all. We found out the group of patients hospitalised for decompensation experienced difficulties at school much more often than the children in the second group. Furthermore, the relationship between children's difficulties at school and occurrence of acute complications was confirmed.

Children in younger school age have sufficiently developed cognitive skills to be able to understand their diseases. Furthermore, they start to realise their difference from their peers. In this period, children often compete and try to achieve success both in and out of school. If children fail, it can affect their self-evaluation. Children's failures can be caused by multiple factors such as tiredness, frequent absence from school because of hospitalisations, or insufficient concentration (2).

Based on their study, Pek et al. concluded that children with type 1 DM had higher self-evaluation in the period after being diagnosed because in that period children were supported by the education process and got necessary family and social support (8).

Therefore, it seems important to continuously educate children so that they can understand "what is happening to them". Individual education is an ideal choice because it allows nurses to focus on specific needs of children and their families (9). Information can also be supplemented by various brochures or books (2). Telenursing could also be an effective tool for supporting and educating children with DM. Providing nursing care, telenurses use systems that allow monitoring data about patients and their physiological parameters (for example: glucose levels). Also, they can use telephone or video consultations to solve nursing problems that arise during the management of diabetes (for example: how to administer insulin correctly, and many others) (10). Furthermore, it is suitable to include children in all activities. Family and peer support groups also have irreplaceable roles (2).

Conclusions

The occurrence of acute complications and frequency of complications in children with type 1 DM is related to children's difficulties at school. Therefore, it is necessary to focus on supporting children and their parents through education sufficiently so that their occurrence is reduced to minimum. Education should be directed in support of modern trends in treatment of children with type 1 DM, the possibility of using telemonitoring, and consultations with physicians and nurses (11) to achieve maximum compensation of DM.

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