SOME PSYCHOLOGICAL ASPECTS OF T1DM IN CHILDREN AND ADOLESCENTS

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Abstract

Diabetes mellitus type 1 (T1DM) is a chronic disease with long term consequences dictating daily struggle to maintain a good metabolic control.

Children and adolescents with T1DM seem to have inferior psychological adjustment to their normal counterparts, which might be associated with glycemic control and disease duration.

The aim of this study is to evaluate the psychological characteristics of children and adolescents with T1DM treated last year in the University Children Hospital in Skopje, Macedonia and to propose some response measures. For psychological evaluation we used CBCL (Child Behavior Check List), GAS (General Anxiety Scale), EPQ (Eysenck Personality Questionnaire) and MMPI-201 (Minnesota Multiphasic Personality Inventory).

The results confirmed the following psychological characteristics: mild depression and anxiety, emotional instability, need for social acceptance, as well as the possible psychopathic traits. Suffering for a complex metabolic and chronic illness, these patients need psychological evaluation and intervention in the management.

Key words: diabetes mellitus, children, adolescents, psychology, management

Introduction

Diabetes mellitus type 1 (T1DM) is a chronic disease with considerable and debilitating long-term consequences dictating daily struggle to maintain a good metabolic control.

Diabetes in children poses considerable physical, mental, and emotional challenges. Striking a balance among hypoglycemia/hyperglycemia, growth/development, and other life factors is difficult for patients, families and health care providers. The adjustment and acceptance to the diagnosis of diabetes takes prolonged time, estimated to 6–9 months for children and 9–12 months for parents [Guthrie, DW. et al, 2003]. Diabetes control and normal family functioning are challenges during childhood and adolescence and require support from a complex medical team.

In general, all chronic diseases in childhood are significant for several reasons: they

threaten the normal child's development, the care can be extremely complex and require a combination of medical and other services, and finally, the care is very costly over a long period of time. Consequently, the socioeconomic status of the family can influence the outcome of any chronic childhood illness. Inadequately managed chronic disease can seriously affect the social, psychological and physical development of children. Some children and adolescents with chronic conditions have higher risk for psychopathology than their healthy counterparts, as well as an increased rate of emotional distress and maladjustment [Huygen et al, 2000].

Although many children are generally well adjusted psychosocially in peer relationship, a chronic disease is a stressor to which children and families must adapt. The anxiety often leads to a maladaptive pattern of parent-

child interactions and child behavior problems designated as "the vulnerable child syndrome".

Conflicting results are obtained concerning the impact of a chronic disease on the behavior of children. One group of studies shows that chronically ill children are more at risk for psychiatric problems, social isolation and school problems than healthy children. On the other hand, other clinical studies show no differences or even superior functioning in ill children compared with healthy ones [Orr et al, 1984]. This conflicting outcome can be explained by the use of different assessment methods, as well as in the sources of information: the child, the parents or other observers.

School presents particular challenge, both physically and socially. The physical environment may contribute to exacerbation of a chronic condition and higher absenteeism. The social environment may include verbal abuse, low peer support, teacher's insufficient knowledge for support leading to lower academic achievement [Isaacs D. 2003].

In the context of improvements in the treatment technologies and the treatment recommendations, we confront a future in which the acute and the chronic physical complications of T1DM for children can more readily be prevented. In addition, two decades of behavioral research in diabetic children and in their families have made possible the identification of some of the 'predictable crises' that occur as the child moves through the stages of normal growth and development and the phases of diabetes, as well as to identify critical family environment variables that support diabetes management and optimal glycemic control.

The aim of this study is to evaluate the psychological characteristics of children and adolescents with diabetes mellitus treated in the University Children Hospital in Skopje, Macedonia and to propose some response measures. The same team with similar methodology have evaluated diabetic children 30 years ago and compared these results with the newest ones.

Sample and Methodology

The group of children with diabetes mellitus ($N = 25$, mean age = 12.5 ± 1.5 years, 18 girls and 7 boys) is evaluated in the period of minimum one year after the diagnosis and in stable health condition.

We applied interview for mothers and children, Child Behavior Checklist (CBCL), General Anxiety Scale (GAS), Eysenck Personality Questionnaire (EPQ), and Minnesota Multiphase Personality Inventory (MMPI) for adolescents and parents. The obtained results for diabetic children are compared with the results for other chronic ill children (cystic fibrosis, juvenile rheumatoid arthritis, malignancies) as well as with a group of healthy children or children with neuroticism matched for age and number.

Child Behavior Checklist (CBCL) is a checklist completed by parents to detect emotional and behavioral problems in children and adolescents [Achenbach TM, 1991]. The CBCL is used with children aged 6 to 18. It consists of 120 questions, scored on a three-point Likert scale (0 = absent, 1 = occurs sometimes, 2 = occurs often). The time frame for item responses is the past six months. The CBCL we used is made of the following syndrome scales: anxious, depressed, uncommunicative, somatic complaints, withdrawal, compulsion, hyperactivity, aggressive behavior and delinquency. These groups belong to two higher order factors – internalizing and externalizing.

CBCL is an important measure for children's emotional, behavioral and social aspects of life and it is used as a diagnostic tool for a variety of behavioral and emotional problems such as attention deficit hyperactive disorder, oppositional defiant disorder, conduct disorder, childhood depression, separation anxiety, childhood phobia, and a number of other childhood and adolescent issues.

General Anxiety Scale (GAS) represent a simple self-evaluating scale used for testing anxiety in children through 45 questions related to different fears [Sarason, IG; 1978]. The scoring is related to the number of positive answers and total results over 15 means accentuated anxiety.

The Eysenck Personality Questionnaire (EPQ) is a 90-item scale for assessing broad aspects of personality in children and adolescents. The items are scored on a dichotomous scale (yes = 1, no = 0). The EPQ yields four scales, related to Eysenck's three factors of personality: Extraversion, Neuroticism, and Psychoticism, and a Lie scale to verify valid responding. The validation and the reliability of

the Macedonian version of the test was performed many years ago in connection with fuzzy reasoning expert systems [Bozinovski et al; 1991, Pop-Jordanova, N; 1995]. The scoring of the results is computer-aided.

Finally, we used Minnesota Multiphasic Personality Inventory (MMPI) as a psychometric test for diabetic adolescents and their mothers. The MMPI-201 used in this research, is the oldest form of the test standardized in ex-Yugoslavia and until now it has been used more frequently in this region [Biro, M; 1981]. MMPI-201 contains ten clinical scales: Scale 1- Hypochondriasis scale which measures a person's perception and preoccupation with their health and health issues; Scale 2 – the Depression scale measures a person's depressive symptoms level; Scale 3 – the Hysteria scale measures the emotionality of a person; Scale 4 – the Psychopathic Deviate scale measures a person's need for control or their rebellion against control; Scale 5 – Paranoia scale measures a person's inability to trust; Scale 6 – the Psychasthenia scale measures a person's anxiety levels and tendencies for somatization and obsession; Scale 7 – the Schizophrenia scale measures a person's unusual/odd cognitive, perceptual, and emotional experiences, and Scale 10 – the Mania scale measures a person's energy, euphoria or hyperactivity.

Three scales L, F and K are validity scales and measure the readiness of the responders to this kind of examination. The L scale refers to the rigidity or naiveté of responder's approach to the test material; the F scale refers to the confused thinking / lack of understanding of the questions or malingering; the K scale refers to responses chosen to be socially acceptable.

The raw scores on the scales are transformed into a standardized metric known as T-scores (Mean or Average equals 50, Standard Deviation equals 10), making interpretation easier for clinicians. Before the analysis of the clinical scales, some criteria should be satisfied: the L and K scales must be with the score ≤ 70 and the F scale ≤ 80 . A significant advantage of the MMPI over other self-report and observer rating scales is that it provides valid and reliable estimates of response bias.

Groups of scales are examined at the same time, for example, the validity scales (L, F, K), the neurotic triad (Hs, D, Hy), and the

psychotic tetrad (Pa, Pt, Sc, Ma). It is argued that the overall elevation of the clinical scales presents a reasonably accurate presentation of the degree of distress the client is experiencing [Greene, 2000].

The statistical evaluation of the obtained results in this research is made using Statistica 7 package.

Results and discussion

The results obtained for EPQ and CBCL are compared with the control group (25 healthy children, mean age 12.5 ± 0.98 years) as well as with the patients diagnosed as neuroticism (N = 25, mean age 12.8 ± 1.5 years).

Figure 1 – Group profile obtained for CBCL

The normal T-scores are below 65 percentile. The results obtained for CBCL showed two picks: on depressive symptoms and on hyperactivity. Our results related to the depressive symptoms correspond with the results obtained by Hood K. *et al.* (2009).

The obtained results for EPQ are presented in Table 1. Diabetic children showed significantly lower psychopathological traits, higher extroversion, lower neurotic tendencies, and same scores on the L scale compared to the control and the neurotic children.

It was interesting to compare the results for the same questionnaire obtained 30 years ago, performed in diabetic children at the same pediatric clinic. It is clear that the results obtained for the P and E scale are practically similar; while for the N scale we obtained previously higher scores related to higher neurotic

tendencies and higher L scale related to the tendencies for social acceptance. Still, the results for EPQ are relatively stable in time for children with T1DM, opposite to the changed socio-economic environment. The general conclusion of our previous study was that children

are pretty introverts, anxious, depressive, manifested high marked tendency toward social acceptance and dissimulation and have often inverse identification and converse manifestations [Kozinkova N., Doneva V; 1985].

Table 1

EPQ obtained for diabetic children

<i>Condition</i>	<i>P</i>	<i>E</i>	<i>N</i>	<i>L</i>
Diabetes (now)	$7.5 \pm 1.5^{**}$	15.5 ± 4.5	$8 \pm 2^{**}$	12 ± 5
Results for 1985	$6.5 \pm 2.9^{**}$	12.21 ± 4.2	$11.79 \pm 3.9^*$	$14.35 \pm 3.8^*$
Neuroticism	$5.16 \pm 3.1^{**}$	14.16 ± 1.7	16 ± 3.6	12.6 ± 4.1
Control	11.87 ± 6.23	13.16 ± 5.75	13.84 ± 5.31	12.64 ± 4.62

P- psychopathological traits, E- extroversion, N- neurotic tendencies, L- lay scale

* $p < 0.05$

** $p < 0.01$

The results obtained for GAS showed that children with JRA are more anxious than other, including the neurotic patients (Fig. 2). The high anxiety can be related to the pain in JRA children and the reduction of the movements in everyday life. According to the Manual, the accentuated anxiety is estimated if the score is over 15. The group of diabetic children showed mean scores 16, which can be interpreted as a mild anxiety.

Figure 2 – Results for General Anxiety Scale

In the study of Schiffrin A. (2001) it was shown that the majority of the diabetic patients exhibit mild depression, anxiety, and somatic complaints at the time of diagnosis, but these symptoms have been treated as temporary and are resolved within 6 to 9 months. However, the author pointed that in some patients, depressive symptoms may increase with the duration of diabetes. Anxiety seems to increase du-

ring the time after the diagnosis and it was shown to be more prevalent in girls than in boys. It corresponds to our own results because the evaluated sample contained more girls than boys.

Much more complex data for the personality characteristics are obtained for diabetic girls and their mothers tested with MMPI-201 (Fig. 3)

mothers _____
girls - - - - -

Figure 3 – MMPI profiles obtained for mothers and diabetic girls

Except for the high L-score, the profile for mothers is in a "normal range". For diabetic girls we obtained picks on Pd-Pa-Sc which correspond to the emotional instability as well as the possible psychopathic traits. Still, the obtained scores are below the T scores = 70, which cannot be interpreted as pathological. However, this finding is related to the results obtained for EPQ where P and N scores are lower than in control.

The influence of the personality traits on the disease is confirmed in the study by Housiaux M. (2010) who showed that alexithymia as a specific personality characteristic (difficulty describing feelings) could influence the glycemic control.

Concerning the stress as a factor which can trigger the onset of diabetes in children, our study showed that more than 50% of the children experienced stress in family (dead of parent/relative, severe fear of something etc.). Similar findings are described by Sipetic S. et al. (2007) in a study performed in part of ex-Yugoslavia. Both results support the hypothesis that stressful life events and psychological dysfunctions are associated with T1DM.

Generally, many studies showed that patients adjustment to diabetes shortly after diagnosis seems to predict adjustment later on. Family characteristics have major implications in the patient adjustment to diabetes, self-management, and quality of life. Children and adolescents living in families with a high degree of conflict or that are less caring appear to have poorer metabolic control [Alvarado-Martel D, et al; 2015; Potts T. et al; 2015].

Individuals with T1DM must adhere to complex regimens involving blood glucose monitoring, insulin administration, nutrition management, and engagement in physical activities [Eilander M. et al; 2015]. Corresponding with the physiological and psychosocial development that is characteristic of the early adolescence and its implications for self-management, adolescence has been recognized for the decline in diabetes care activities and glycemic control [Costa LM.; 2015].

Interventions, which are beneficial, include family therapy, supportive counseling or biofeedback modalities. Our experience with peripheral and central biofeedback treatment is very encouraging [Pop-Jordanova N; 2007,

2008]. Multidisciplinary teamwork can improve the care, quality of life and prognosis for both children and their families [Pansier, B; 2015; Moghanloo,V; 2015].

In conclusion, there is a need for interest in psychological evaluation and intervention in the management of T1DM in children and adolescents. A possible limitation of this study was the relatively small sample size. Therefore, our findings should be validated by further evidence obtained from large-scaled studies.

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Резиме

НЕКОИ ПСИХОЛОШКИ АСПЕКТИ НА Т1ДМ КАЈ ДЕЦА И АДОЛЕСЦЕНТИ

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Типот 1 дијабетес (Т1ДМ) претставува хронична болест со долгорочни последици наметнати од секојдневниот напор за одржување добра метаболичка контрола. Децата и адолесцентите со Т1ДМ се чини дека имаат инфериорно психолошко приспособување споредено со нивните нормални врстници, што може да биде асоцирано со гликемиската контрола и траењето на болеста.

Цел на оваа студија е да се евалуираат психолошките карактеристики на деца и адолесценти со Т1ДМ лекувани во последната година на Клиниката за детски болести во Скопје, Македонија, и да се предложат некои мерки за ублажување.

За психолошка проценка користевме CBCL (Чек-листа за поведението на децата), GAS (Скала за општа анксиозност), EPQ (Ајзенков инвентар на личност) и MMPI – 201 (Минесота инвентар на личност).

Резултатите ги потврдија следниве психолошки карактеристики: умерена депресија и анксиозност, емоционална нестабилност, потреба од социјална прифатеност, како и можни психопатски особини на личноста. Страдајќи од комплексна метаболичка и хронична болест, овие пациенти во менаџментот на заболувањето имаат потреба од психолошка евалуација и интервенции.

Клучни зборови: шеќерна болест, деца, адолесцент, психологија, менаџмент