Original Article

Psychological Symptoms in Children with Type-1 Diabetes

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Abstract

Aim: This research was designed to determine the psychological symptoms of children with type-1 diabetes.
Methods: The study was performed at the Pediatric Endocrine Outpatient Clinic of a Training and Research Hospital in Istanbul between November 2016 and April 2017. The sampling of this descriptive and cross-sectional study conducted with the children who applied to the outpatient clinic for diagnosis or treatment, and agreed to participate in the study (N: 120). Data were collected using the "Personal Information Form" and "Symptom Checklist-90-R".
Results: The mean age of the children was 14.6, more than half of them were girls, half of them had a moderate economy, 16.7% had a chronic illness in their family, and 20% had a family history of psychiatric disorder. It was found that 79.2% of the children had a period between 1 and 5 years after diagnosis, 40% of the family members had diabetes, and 70% of children's daily life was affected by the disease. While the mean interpersonal sensitivity sub-dimension score of the children's psychological symptom screening was the highest, and the psychotic sub-dimension mean score was the lowest.
Conclusion: It was determined that children have some psychological symptoms after diagnosing with type-1 diabetes. It was found that the time of getting the diagnosis and having the child or family member with a chronic illness and/or psychiatric disorder effect the development of psychological symptoms.

Keywords: Type-1 Diabetes, Psychological Symptoms, Children

Introduction

Diabetes Mellitus is one of the most prevalent chronic health conditions with complete or partial insufficiency of insulin in the pancreas. The number of people diagnosed with diabetes is 422 million and the global prevalence among adults over 18 years is 8.5% in 2014. This ratio found to be high at underdeveloped and developing countries (WHO, 2018). In addition, diabetes is a disorder characterized by modifiable risk factors such as unbalanced nutrition, less active life and also genetics.

Type-1 diabetes, known as insulin-dependent diabetes, occurs mostly in childhood and adolescence. It has known that 1 out of every 300 people under the age of 18 in the USA has diagnosed with type-1 diabetes and the global prevalence is around 2-5% and the incidence continues to increase worldwide (Maahs, et al., 2010). The treatment regimen is complex and demanding and causes a source of significant stress for children, adolescent and their families (Rechenberg, et al., 2017). The adaptation process to treatment requires taking insulin at the prescribed dose daily due because of insufficient insulin production in the pancreas. Polyuria, polydipsia, weight loss, excessive hunger, and inability to cope with blood sugar imbalance affect both the academic achievement and social relationships of the child newly diagnosed with type-1 diabetes. It is known that children diagnosed with type-1 diabetes are at an increased risk of mental health conditions. Especially depression and anxiety occur in children and adolescent with type-1 diabetes at

approximately twice the rate of youth in the general population (Rechenberg, Whittemore, & Grey, 2017; Grey, Whittemore, & Tamborlane, 2002). Also, family members experience these difficulties during the initial diagnosis process and the psychosocial adaptation process to the disease as well as the child.

The psychosocial adaptation to chronic disease is critical because treatment requires continuity. As the physical aspect of the disease is most emphasized, its psychological aspect is often neglected. Psychosocial adjustment covers a wide range of subjects such as psychological adjustment of the individual related to disease, social adjustment related to his/her private life and profession, and economic adjustment related to the cost of the treatment process. The age at which the child is diagnosed with diabetes, the specific treatment he or she has, the perception of health and illness, and the cognitive level that is effective in assessing these conditions play an important role. Although non-compliance and non-management of symptoms are seen primarily in children and young people, compliance with this process increases in later years. In addition to this problem, the child's feeling about him/herself and stigmatization from his / her peers hurt the child psychologically. Creating collaboration between adolescent, parents and healthcare providers will ease the adaptation (Celik, Kelleci, Avcı, & Temel, 2015; Aytar Yılmaz, 2013) In this period, determining the psychological symptoms seen by the pediatric nurses and to manage these play an important role to support the family members and the child.

The aim of the study was to determine the psychological symptoms in children with type-1 diabetes.

Research questions;

1. Do children with Type-1 Diabetes have psychological symptoms associated with the disease?

2. In which sub-dimensions do the psychological symptoms of children with type-1 diabetes occur more often?

Materials and Methods

The universe of this cross-sectional & descriptive study consisted of the children who applied to the Pediatric Endocrine Polyclinic of a Training and Research Hospital in Istanbul in the November 2016 - April 2017. The population of the study consisted of children who applied to the outpatient clinic for diagnosis and treatment, and the sample consisted of children who met the research criteria. The study was performed with 120 children who are between 12-17 years old, diagnosed with type-1 diabetes in a year and is volunteered to participate in the research. After the ethics committee's approval (Dated: 02/20/2015 Numbered: 14), the research data was collected by researchers. Data were collected using the "Personal Information Form" and "Symptom Checklist-90-R".

Research Criteria:

- Being between 12-17 years old
- Diagnosing of Type-1 Diabetes for at least one year
- Applying to the Endocrine Outpatient Clinic where the study was conducted
- Volunteer to participate in the research

Data Collection Tools

a. Personal Information Form

Personal Information Form, which was prepared by the researchers, consisted of 16 questions included sociodemographic characteristics, knowledge level about diabetes mellitus, of the individuals and their families.

b. Symptom Check-list (SCL-90-R)

SCL-90-R is a self-report questionnaire for psychological distress and multiple aspects of psychopathology (Derogatis et al. 1971, 73, 74, 75, 76, and 77). It consists of 90 items and they are rated on a five-point Likert-scale, ranging from “not at all” (0) to “extremely” (4). The SCL-90-R has nine sub-dimensions; somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism. The instrument's three global indices of distress are Global Severity Index (GSI), Positive Symptom Distress Index (PSDI), and Positive Symptom Total (PST). The General Severity Index (GSI) is the mean score for all responded items and serves as an overall measure of psychological distress. Coefficient α in a study with 209 symptomatic volunteers ranged from 0.77 to 0.90 (Derogatis et al. 1976). The SCL-90 normally requires approximately 20 minutes to complete. In Turkey, the reliability and validity

of the SCL-90-R were made by Kılıç in 1991. Sub-dimensions of the Cronbach alpha scores found 0.82 for somatization, 0.84 for obsessive-compulsive, 0.79 for interpersonal sensitivity, 0.78 for depression, 0.73 for anxiety, 0.79 for hostility, 0.78 for phobic anxiety, 0.63 for paranoid ideation, 0.73 for psychoticism (Kılıç, 2006).

Statistical Analysis

Statistical Package for Social Sciences (SPSS) Version 24.0 was used for statistical analysis (IBM Corp.). The parametric and non-parametric descriptive statistics were evaluated with a number, frequency, mean and standard deviation. The Kolmogorov-Smirnov test was used to evaluate the normal distribution. T-test was used for group comparisons. P value <0.05 was considered statistically significant.

Results

The mean age of the children was 14.6 ± 2.9 years (distribution 12-17), 55% were girls, 50% had a moderate economy, 16.7% had a chronic illness in their family and 20% had a family history of psychiatric disorder (Table 1).

It was determined that 79.2% of the children had a period between 1 and 5 years after diagnosis, 40% of the individuals in their family had been diagnosed with diabetes, 70% had affected their daily life because of the disease, and 15% had a chronic disease other than diabetes, and 62.5% had anxiety about the disease (Table 2).

Table 1: Characteristics of children (N: 120)

Variable		n	%
Gender	Female	66	55.0
	Male	54	45.0
Income Status	Low	25	20.8
	Moderate	60	50
	High	35	29.2
Family Chronic Illness Status	Have	20	16.7
	Have not	100	83.3
Family Psychiatric Disorder Status	Have	24	20
	Have not	96	80
Total		120	100

Table 2: Distribution of children' diabetes characteristics (N: 120)

Variable		n	%
Duration of disease	1-5 years	95	79.2
	6-10 years	25	20.82
Family Diabetes Mellitus status	Have	48	40
	Have not	72	60
Does your disease affect your daily life?	Yes	84	70
	No	36	30
Presence of chronic illness other than Diabetes	Have	18	15
	Have not	102	85
Are you worried about the disease?	Yes	75	62.5
	No	45	37.5
Total		120	100

Table 3: Mean scores of SCL-90-R and Scale's Sub-dimensions (N: 120)

Sub-dimensions	n	Mean	SD	Min.	Max.
Somatization	120	1.767	0.655	0.080	3.750
Obsessive-compulsive	120	1.655	0.618	0.200	3.200
Interpersonal sensitivity	120	1.852	0.694	0.000	3.220
Depression	120	1.760	0.603	0.000	3.080
Anxiety	120	1.695	0.662	0.000	3.100
Hostility	120	1.615	0.736	0.000	3.170
Phobic anxiety	120	1.739	0.738	0.000	3.000
Paranoid ideation	120	1.677	0.740	0.000	3.330
Psychoticism	120	1.431	0.627	0.000	3.200
Additional Items	120	1.717	0.722	0.000	3.140
Global Severity Index (GSI)	120	1.695	0.550	0.100	2.860
Positive Symptom Distress Index (PSDI)	120	4.659	1.133	3.140	8.390
Positive Symptom Total (PST)	120	16.909	5.697	0.950	28.640

Table 4: Comparison of the mean scores of the SCL-90-R with psychiatric disorder history of the participants (N: 120)

		n	Mean	SD	t	p
Somatization	Have	24	2.046	0.445	1.945	0.054
	Have not	96	1.696	0.682		
Obsessive-compulsive	Have	24	1.877	0.470	1.702	0.092
	Have not	96	1.596	0.637		
Interpersonal sensitivity	Have	24	2.038	0.374	1.255	0.073
	Have not	96	1.803	0.739		
Depression	Have	24	1.959	0.478	1.559	0.125
	Have not	96	1.707	0.620		
Anxiety	Have	24	1.980	0.469	1.967	0.052
	Have not	96	1.619	0.690		
Hostility	Have	24	2.133	0.411	2.462	**0.001**
	Have not	96	1.640	0.771		
Phobic anxiety	Have	24	2.030	0.590	2.625	**0.009**
	Have not	96	1.509	0.734		
Paranoid ideation	Have	24	1.830	0.415	2.992	**0.003**
	Have not	96	1.329	0.630		
Psychoticism	Have	24	2.051	0.733	2.327	**0.020**
	Have not	96	1.579	0.715		
Additional Items	Have	24	1.981	0.550	1.654	0.101
	Have not	96	1.650	0.739		
Global Severity Index (GSI)	Have	24	1.987	0.344	2.514	**0.013**
	Have not	96	1.620	0.569		
Positive Symptom Distress Index (PSDI)	Have	24	4.092	0.752	-2.288	**0.024**
	Have not	96	4.802	1.170		
Positive Symptom Total (PST)	Have	24	19.959	3.549	2.453	**0.015**
	Have not	96	16.138	5.779		

The children's SCL-90-R sub-dimensions mean score of somatization was 1.767 ± 0.655, the mean score of obsessive-compulsive was 1.655 ± 0.618, the mean score of interpersonal sensitivity was 1.852 ± 0.694, the mean score of depression was 1.760 ± 0.603, and the mean score of anxiety was 1.695 ± 0.662, the mean score of hostility was 1.615 ± 0.736, the mean score of phobic anxiety was 1.739 ± 0.738, the mean score of paranoid ideation was 1.677 ± 0.740, the mean score of psychoticism was 1.431 ± 0.627, the mean score of additional items was 1.717 ± 0.722, the mean score of global severity index was 1.695 ± 0.550, the mean score of positive symptoms distress index was 4.659 ± 1.133, the mean score of the total positive symptom was 16.909±5.697 (Table 3). In this study, while there was no statistically significant difference between family history of psychiatric disorders and the mean scores of somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, eating and sleep disorders; and between other sub-dimensions and family psychiatric disorders history were statistically significant ($p < 0.05$). It was determined the mean score of the psychological symptom screening was higher in the patients whose duration of diagnosis was between 1- 5 years compared to between 6 - 10 years. Also, the mean score of the psychological symptom was higher in the patients who stated that the disease affects the daily life of those who do not, and who had a chronic disease other than type-1 diabetes. In addition, the mean score of the psychological symptom was higher in the patient who has anxiety about the disease compared to those who has not.

Discussions

There are many studies indicating that children with chronic disease are at high risk in emotional, behavioral, cognitive and social aspects (Rechenberg, Whittemore, & Grey, 2017; Reynolds, & Helgeson, 2011). It is known that there is a relationship between chronic disorders such as diabetes mellitus and psychological disorders (Gray, 2002). According to the SCL-90-R screening list, psychological symptoms were found in children with type-1 diabetes between 12-17 years of age. Children and adolescents with type-1 diabetes' frequent injections, blood glucose monitoring, exercise requirements are thought to be factors that decrease their quality of life. The poor quality of life and the inability of the child to express himself cause anxiety about his life due to his illness. Problems such as decreased self-esteem, feeling different from peers, not being part of the peer group, and deterioration in peer relationships due to diabetes can also cause social anxiety (Rechenberg, et al., 2017; Şahin, 2015). In our study, it was found that diabetes affects the majority of the children's daily lives, and their anxiety levels were high. It is reported in the literature that the incidence of psychiatric disorder in adolescents and young adults with type-1 diabetes is 2-3 times higher than in the general population (Grey, Whittemore, & Tamborlane, 2002; Kovacs, 1997). In studies, the diagnosis of psychiatric disorders in children and adolescent with type-1 diabetes varies. However, it has known that diagnosing with multiple psychiatric disorders is higher. When the distribution of the diagnosis is examined, it is reported that the prevalence of anxiety, depression, adjustment disorders, and eating disorders is higher in children and adolescents with type-1 diabetes compared to the normal population (Sahin, 2015; Northam, 2005). The prevalence of psychiatric disorder was found to be 33.3% in diabetic patients and 9.7% in the control group. In the diabetic group, it was reported that sleep disorders, compulsions, depressive mood, and especially somatic symptoms, were higher than the control group (Blanz, 1993). In our study, the total mean score of positive symptoms was found to be high. In another study, 58.2% of 175 diabetic patients between the ages of 2-25 were found to have one of the psychiatric disorders that met the DSM-IV diagnostic criteria. In the same study, the prevalence of anxiety disorder (19%) and eating disorder (18%) was reported to be high in diabetic patients (Dantzer, 2003). Kovacs et al., 10-year follow-up of patients with type-1 diabetes; it was found that approximately 47.6% of the patients developed a psychiatric disorder; depressive disorder, anxiety disorders, and behavioral disorders, respectively (Kovacs M, 1997). In a study conducted in our country, the prevalence of anxiety was found to be 47.3% and the prevalence of somatization was 50.9% in children and adolescents with type-1 diabetes. There was no statistically significant correlation between age and gender and scores. There is no difference between boys and girls in terms of psychological symptoms. (Arıkan & Antar S, 2007). In another study, the quality of life perception of adolescents with a psychiatric

disorder in the diabetic group was found to be worse than those without a psychiatric disorder. However, as the depression and anxiety mean scores increased, the quality of life mean scores of the adolescents decreased in the diabetic group (Şahin, N, 2015). In a study of children and adolescents with type-1 diabetes with depressive symptoms and eating disorders, quality of life perceptions was reported to be worse (Grylli V, 2005).

Limitations of the Research

One of the most important limitations of our study was that it included patients diagnosed with type-1 diabetes in as little as 6 months. The increase in the number of patients to be included in the study could increase our data. We evaluated the patient population including adolescence. New studies, participation under the age of 12 and using the different forms, will be appropriate to look at the psychological symptom levels of younger children.

Conclusion

In line with the results of the study, it was seen that children diagnosed with type-1 diabetes showed some psychological symptoms after getting diagnosed. Time of the diagnosis and the presence of chronic illness and/or psychiatric disorder in the child or family members affect the emergence of psychological symptoms in the child. Psychological symptoms can affect the current medical treatment and the prognosis of the disease, and this situation mostly escapes from the clinicians' attention. Our study also emphasizes the need for consultation and liaison between clinics. Collaboration between clinics can improve the patient's quality of life; prevent potential complications and reduce treatment costs. Determining the knowledge of the child and his/her family about diabetes by pediatric nurses will be effective in determining the content of the planned education and follow-up in this field. Furthermore, increasing the scientific knowledge through researches in this field will contribute to the literature.

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