

Psychological screening in children with diabetes mellitus type-I at the Children's Hospital and the Institute of Child Health, Multan

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Abstract

Objective: To determine the frequency of psychological problems in diabetic children.

Methods: The cross-sectional study was conducted at the Diabetic clinic of the Children's Hospital and the Institute of Child Health, Multan, Pakistan, from March to December 2011. Diabetic patients aged 7-15 years, who were on insulin therapy for at least one year were included in the study. Demographic data, history and physical examination were recorded. Glycosylated haemoglobin level was checked in all cases, and the Childhood Depression Inventory was used to assess the psychological well-being of the children. A minimum score of 13/54 was used to screen for depression. SPSS 19 was used for statistical analysis.

Results: Out of 86 diabetic children, clinical depression was observed in 29 (33.7%). Poor socioeconomic status (21/29; 72.4%), longstanding disease (16/29; 55.1%) and adolescence age (20/29; 69%) were the major factors associated with depressive symptoms.

Conclusion: Depression is a commonly associated psychological disorder in diabetic children, and should be addressed along with medical and dietary management.

Keywords: Insulin dependent diabetes mellitus (IDDM), Childhood depression Inventory (CDI), Glycosylated haemoglobin (HbA1c). (JPMA 63: 1520; 2013)

Introduction

Diabetes mellitus Type 1 (T1D) is a chronic metabolic disorder with a significant rise in its prevalence over the past two decades.¹ The recommended management regimen for T1D is multifaceted and challenging; frequent blood glucose monitoring, controlled carbohydrate intake, repeated insulin administration (3-4 injections/day), altering insulin doses according to the dietary and activity patterns, and checking urine for ketones are necessary.² The importance of optimal control in children and adolescents to prevent the long-term complications of diabetes is already well-recognised.^{3,4}

The psychosocial impact of diabetes on children with T1D and their families is documented in literature. In a prospective study, 42.4% of adolescents experienced some sort of psychiatric ailment during 9-year follow-up; depressive disorders being the most common (27.5%) followed by anxiety disorders (19.6%).⁵ Poor metabolic controls are said to be associated with depressive ailments in children.⁶ Adolescence is a period of rapid biological changes accompanied by increasing physical, cognitive and emotional maturity that can seriously complicate diabetes regulation and displays the worst

glycaemic control compared to other age groups,⁷ which puts them at an increased risk for developing such complications.⁸ The depressive symptoms in these children in the general population are associated with poor socioeconomic status, longstanding disease and poor health outcomes.⁹ Recently, the American Diabetes Association issued a statement calling for regular annual screening for depression in children who are 10 years and older as a part of children's clinical care.¹⁰

The majority of research on psychological disorders in children with T1D has been conducted with adolescents, and less is known about depressive symptoms in school-age children. The current study was planned to assess the psychological well-being of diabetic children aged 7 years and above at a diabetic clinic in Multan, Pakistan.

Patients and Methods

The cross-sectional study was conducted at the Diabetic Clinic of the Children's Hospital and the Institute of Child Health, Multan, from March to December 2011. Children from both genders, 7-15 years of age with T1D and on insulin therapy for at least one year with no other systemic illness or long-term diabetic complications were included in the study on the basis of non-probability consecutive sampling. Children with known mental disorders, on psychopharmacological medications or psychotherapy were excluded. The study was approved by the institutional ethics committee.

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After explaining all the details, informed consent was obtained from the parents/guardians. Demographic data, history, physical examination, glycosylated haemoglobin (HbA1c) level, were recorded on a pre-designed proforma. Patients were stratified in various groups to minimise the effect of different modifiers like age, gender, socio-economic status, duration of diabetes, and glycaemic control. Age was divided in two groups 7-11.5 years and >11.5-15 years. Socio-economically, patients were grouped into, low income (<Rs10000/month), average income (Rs10000-50000/month) and high income (Rs>50000) groups. Duration of diabetes was stratified in three groups; 1-3 years, >3-8 years and >8 years respectively, and so was the case with glycaemic control; good control (HbA1c level <8%), average control (HbA1c level 8-10%) and bad control (HbA1c level >10%). Quantitative determination of HbA1c was done by immuno-inhibition blood test on Olympus analyser.

For the purpose of the study, T1D was defined as symptoms like polyuria, polydipsia, unexplained weight-loss with glucosuria or ketonuria plus random plasma glucose of ≥ 200 mg/dl or fasting plasma glucose of ≥ 126 mg/dl or 2-hour plasma glucose during an oral glucose tolerance test (GTT) of ≥ 200 mg/dl.¹¹

HbA1c was defined as a form of haemoglobin that is measured primarily to identify the average plasma glucose concentration over one to three preceding months.¹²

CDI was defined as is a symptom-oriented instrument for assessing depression in children between the ages of 7 and 17 years; used to assess the psychological well-being of children.¹³ It is a self-report screening measure of depressive symptoms in school-aged children and adolescents

containing 27-item self-reporting questionnaires developed from the Beck Depression Inventory for adults.¹⁴ Each item consists of three statements of increasing severity scored 0, 1, or 2 in the direction of increasingly depressed mood. The maximum obtainable score is 54. A score of 13 has been recommended as a criterion score for clinical depression.¹⁵

The CDI questionnaire was provided to the study population for self reporting who were able to read and write English. Most of the children could not understand English so mediation was arranged. Questions were explained to the child and parents, and the response was recorded. Data was analysed using SPSS version 19.0. Descriptive statistics were applied. Frequencies of variables like gender, and depression (outcome variable) were calculated.

Results

Out of 86 children, there were 41(47.6%) boys, and male-to-female ratio was 1:0.91. There were 29 (33.7%) depressed (CDI>13) children and 57 (66.2%) not depressed (CDI score <13). Overall, 41 (47.6%) children were in 7-11.5 years age group, and 45 (52.3%) in >11.5-15 years age group. Depression was found in 9 (31%) children in the first group and in 20 (69%) in the adolescent age group (Table-1). Duration of Diabetes was stratified in three groups: 1-3 years; 24 (27.9%); >3-8 years, 29(33.7%); and >8 years, 33 (38.3%). Depression was identified in 4 (13.7%), 9 (31%) and 16 (55%) patients in the three age groups respectively.

In terms of socioeconomic status, there were 57(66.2%) in low-income group, 22 (25.5%) average income, and 7 (8.1%) high income. Depression was documented in 21 (72%), 5 (17.2%) and 3 (10%) patients respectively (Table-2). Poor HbA1c control was seen in 63 (73.2%), average control in 10 (11.6%)

Table-1: Depression in diabetic children with reference to age and duration of disease.

Psychological problems	Age in years		Total	Duration of diabetes			Total
	7 -11.5	>11.5-15		1-3 years	>3-8 years	> 8 years	
No Depression (CDI Score <13)	32(56.1%)	25(43.8%)	57	20(35%)	20(35%)	17(30%)	57
Depression (CDI Score >13)	9(31%)	20(69%)	29	4(13.7%)	9(31%)	16(55.1%)	29
Total	41(47.6%)	45(52.3%)	86	24(27.9%)	29(33.7%)	33(38.3%)	86

CDI: Childhood Depression Inventory.

Table-2: Depression in diabetic children with reference to glycaemic control and socioeconomic status.

Psychological problems	Glycaemic Control			Total	Socioeconomic status			Total
	Poor Control (HbA1c >10)	Average (HbA1c 8-10)	Good (HbA1c <8)		Low income	Average Income	High Income	
No Depression (CDI Score <13)	42(73.6%)	6(10.5%)	9(15.7%)	57	36(63%)	17(29.8%)	4(7%)	57
Depression (CDI Score >13)	21(72.4%)	4(13.7%)	4(13.7%)	29	21(72.4%)	5(17.2%)	3(10.3%)	29
Total	63(73.2%)	10(11.6%)	13(15.1%)	86	57(66.2%)	22(25.5%)	7(8.1%)	86

CDI: Childhood Depression Inventory. HbA1c: Glycosylated Haemoglobin.

and good control in 13 (15.1%) children. Depression was observed in 21 (72.4%) patients in the poor control group.

Discussion

T1D is a chronic metabolic disorder with awful consequences on patients and parents. The purpose of the study was to determine the frequency of depression among T1D children and to look for its association with age, duration of diabetes, socioeconomic status and glycaemic control. In this study, out of 86 diabetic children, 29 (33.7%) showed clinical depression. Similar observation was reported by a study in which psychological disorders noted in the diabetic group were 33.3% compared to 9.7% in the control group.¹⁶ Kovacs et al studied a cohort of 92 T1D adolescent patients, and reported that the most common diagnosis was adjustment disorder (36%), followed by the combination of adjustment disorder with depressed mood (18%).¹⁷ On the other hand, Jacobson et al did not find any association between psychological disorders and T1D.¹⁸

Out of 29 children having CDI score >13, depression was more common in adolescent age group (n=20) compared to younger children (n=9). This was probably because of increasing physical, cognitive and emotional maturity that can seriously complicate diabetes treatment.⁷ It was also associated with longer duration of diabetes (n=16), poor socioeconomic status (n=21) and poor metabolic control (n=21). Dantzer et al found an association between depression and glycaemic control in only 2 of the 8 paediatric studies that they reviewed.¹⁹

There were certain limitations of the study. CDI is a self-reporting screening measure of depressive symptoms in school-aged children and adolescents. As it is written in English, most of the study subjects were unable to understand and we had to act as mediators. Secondly, the sample size was representing a smaller group of diabetic children. A largerscale, multicentered study may be more representative of broader diabetic children and adolescent population.

In order to ensure optimal management of diabetes, these factors must be considered in day-to-day management and to prevent future problems, multi-disciplinary paediatric diabetes teams must offer early identification and management of psychosocial problems in addition to medical and dietary management by family-based interventions.

Conclusion

Depression is common in children with T1D. It is associated with adolescent age, longstanding disease, poor socioeconomic status and glycaemic control. It should also be

timely assessed and managed along with dietary and pharmacological therapy.

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