Mood Disorder in Adolescents with Diabetes Mellitus in Kirkuk City

Abbas Lateef Muhe-Aldeen

M.Sc. Lecturer, Psychiatric & Mental Health Nursing

Abstract

Objective: Assess the severity of mood disorders in adolescents with type 1 diabetes mellitus (TIDM), and identify the relationship between the mood disorder and some socio-demographic characteristics among Adolescents.

Methodology: A descriptive study was carried out at center of diabetics & endocrine disease in the Kirkuk city, from February, 10th, 2019 up to November 10th, 2019 in order to achieve the objectives of the present study. Non-Probability (Purposive) sample of (70) patients. Developed questionnaire was constructed for the purpose of the study which consisted of two parts: the demographic characteristics; and Child Depression Inventory (CDI) it is a Likert-type scale consisting of 27 items . The data were collected through the use of interview technique (face to face). The data was analyzed through the application of descriptive statistical analysis (Frequency, Percentage (%), Mean of Score) and inferential statistic (ANOVA & t. test).

Results: The findings of the study indicated that the majority of the sample (40%) of them with age group (16-17 years), (54%) of them were male, (71%) of them single, the most of the sample were graduated from intermediate school (47%), regarding to the occupation (42.9%) of the sample was student, and in relation to financial status the majority of the adolescent was in barely sufficient and constitute (77%).

Keywords: *Mood Disorder, Adolescents, T1DM, Depression, CDI, Anxiety, Anhedonia.*

Introduction

Depression is the most common and hurtful comorbidities, if untreated, depression becomes chronic, persistent, and increasingly destructive. There is greater psychiatric morbidity in T1DM patients than in the general population, with depression being the most common psychiatric disturbance followed by anxiety, and these disorders have a direct impact on metabolic control.[1]

Adolescence is a transitional period characterized by significant physical; mental; and social alteration. For this reason, it is a duration of high risk for the increase of psychiatric disorders, especially anxiety disorders and depression. Type 1 diabetes mellitus (T1D), the juvenile form of diabetes, is a chronic endocrine disease that generally arise suddenly during childhood and adolescence. It follows that T1D would add up to major emotional sensitivity to the common disturbance of adolescence, since these individuals must manifestation a series of significant revision in their lives and self-care routine to avoid medical complexity.[2] Type 1 diabetes (T1DM) is one of the most frequent chronic metabolic diseases in childhood and adolescence.[3] Thus, diabetes may composition the risk for psychological disorder in adolescents. Maternal depression was a risk factor for depression in youths with T1DM; this may be caused by a variety of biopsychosocial factors including genetics, family dynamics, and parental support or involvement in diabetes care.[4] Studies particularly investigate the prevalence of mental disorders during adolescence are more uncommon, but an estimated prevalence of 11-18% for this age group has been reported.[5]

Ten percent of adolescent girls with type 1 diabetes meet criteria for eating disorders compared to 4% of their age-matched parallel without diabetes eating disordered with insulin limitation is also seen in boys with diabetes.[6]

Furthermore, eating disorders are correlating with poor metabolic control.[7] Depression may affect commitment to diabetes treatment due to reduce interest, energy, and motivation which thereafter yields poor diabetic control, and may worsen symptoms of blame or hopelessness.[8] There is a 27% raise in the probability of depression per unit high in HbA1c reports.[9] Prospective research might recognize the relationship between depressed mood and rising HbA1c values. Parental and family conflict plays a role in depressive symptoms, family conflict may be diabetes-specific, correlating to responsibilities around glucose handling and insulin therapy. Depressed parents will often provide less physical and emotional upholding to their children, having minimal energy and motivation to help in the habit of diabetes management.[10]

A real excess in the rate of psychiatric diagnoses among adolescents has been observed in recent years. A meta-analysis of 41 studies from 27 different countries estimate the worldwide prevalence of psychiatric disorders among children and adolescents found a mean rate of 13.4% of individuals with a mental disease. [11]

Methodology

1. **Participants:** A descriptive study was carried out at center of diabetics & endocrine disease in the Kirkuk city, from February, 10th, 2019 up to November 10th, 2019 in order to achieve the objectives of the present study. Non-Probability (Purposive) sample of (70) adolescent diagnose type 1 diabetes mellitus.
2. **Data Collection:** After informal consent was obtained from adolescents aged 12-19 years and their parents using a screening tool (CDI). The data were collected through (face to face) interview.
3. **Instrumental:** Socio -demographic characteristics: Consists of the questions containing information related to adolescent with Diabetes Mellitus (age, gender, marital status, level of education, occupation and financial status).

   Child Depression Inventory (CDI): It is a Likert-type scale, This scale was developed by Maria Kovacs[12] consisting of (27 items) scored on a 3-point scale (0,1,2) as follows: No symptoms (0), Mild to moderate symptoms (1), Severe symptoms (2) and the scoring are = Normal (0 - 12), Mild to Moderate depression (13 - 19), Severe depression (more than 19) and subdivided into five subscales was used to investigate depression symptoms among adolescent with diabetics mellitus type 1, but is not used to diagnose depression. The CDI sub-scales measure negative mood in items (1,2,6,9,10,11,13,19,20); interpersonal problems in items (5,8,26,27); inefficiency in items (15,16,17,18,23); anhedonia in in items (4,12,21,22); and negative self-esteem in items (3,7,14,24,25). The total depressed array index derives from the sum of the five sub-scales of the CDI.
4. **Statistical Analysis:** The data were analyzed by using (SPSS) version (23) and through the use application of descriptive statistical analysis (Frequency, Percentage (%) & Mean of score) and inferential statistic (ANOVA & t. test).

Results

Table (1): Assessment of depression symptom among adolescent with Percentage & Mean of Score.

No.	Items	No symptoms		Mild symptoms		Definite symptoms		MS	Assess
		F	(%)	F	(%)	F	(%)		
1.	Sadness	26	37.1	40	57.1	4	5.7	0.69	M
2.	Pessimism	31	44.3	36	51.4	3	4.3	0.60	M
3.	Self-deprecation	33	47.1	35	50.0	2	2.9	0.56	M
4.	Anhedonia	26	37.1	32	45.7	12	17.1	0.80	M
5.	Misbehavior	40	57.1	26	37.1	4	5.7	0.49	L
6.	Pessimistic worry	46	65.7	20	28.6	4	5.7	0.40	L
7.	Self-hate	50	71.4	18	25.7	2	2.9	0.31	L
8.	Self-blame	38	54.3	28	40.0	4	5.7	0.51	M

No.	Items	No symptoms		Mild symptoms		Definite symptoms		MS	Assess
		F	(%)	F	(%)	F	(%)		
9.	Suicidal ideation	50	71.4	18	25.7	2	2.9	0.31	L
10.	Crying spells	38	54.3	28	40.0	4	5.7	0.51	M
11.	Irritability	22	31.4	37	52.9	11	15.7	0.84	M
12.	Less social interest	18	25.7	40	57.1	12	17.1	0.91	M
13.	Indecisiveness	19	27.1	37	52.9	14	20.0	0.93	M
14.	Negative self-image	12	17.1	38	54.3	20	28.6	1.11	M
15.	Schoolwork problems	10	14.3	37	52.9	23	32.9	1.19	M
16.	Sleep problems	14	20.0	41	58.6	15	21.4	1.01	M
17.	Fatigue	13	18.6	44	62.9	13	18.6	1.00	M
18.	Reduced appetite	19	27.1	38	54.3	13	18.6	0.91	M
19.	Somatic concerns	24	34.3	39	55.7	7	10.0	0.76	M
20.	Loneliness	24	34.3	40	57.1	6	8.6	0.74	M
21.	School dislike	31	44.3	35	50.0	4	5.7	0.61	M
22.	Few friends	32	45.7	31	44.3	7	10.0	0.64	M
23.	Academic decline	35	50.0	28	40.0	7	10.0	0.60	M
24.	Negative peer comparison	42	60.0	26	37.1	2	2.9	0.43	L
25.	Feels unloved	37	52.9	30	42.9	3	4.3	0.51	M
26.	Disobedience	45	64.3	24	34.3	1	1.4	0.37	L
27.	Fighting	47	67.1	23	32.9	0	0	0.33	L
GMS= 0.72									

The table (1) show the mean of score out of this table was moderate significant depression symptoms amongadolescent with diabetes mellitus in most of the items, with grand mean of score (0.72).

Table (2) Frequency of Depression in adolescents with type 1 diabetes.

No.	Depression Symptoms	Frequency (f)	Percentage (%)
1.	Normal	5	7.1
2.	At Risk	49	70.0
3.	Clinical Range	16	22.9
Total		**100**	**100.0**

The table (2) show that the majority of sample were at risk severity level of depression symptoms among adolescent with DMT1 (70.0%).

Table (3) Distribution of depression and age of adolescents with diabetes type 1

Depression / Age	Normal	At risk	Clinical range	Total
12-13	3	1	0	4
14-15	1	8	5	14
16-17	1	24	3	28
19-19	0	16	8	24
Total	**5**	**49**	**16**	**70**

The table (3) show that the majority of sample were at risk symptoms of depression in age group (16-17)years.

Table (4) Distribution of depression and gender of adolescents with diabetes type 1

Gender \ Depression	Normal	At risk	Clinical range	Total
Boy	3	26	9	38
Girl	2	23	7	32
Total	**5**	**49**	**16**	**70**

The table (4) show that the majority of sample were male who at risk symptoms of depression.

Items		Sum of Squares	DF	Mean Square	F	Sig.
Age	Between Groups	11.253	2	5.627	8.831	0.000 H.S
	Within Groups	42.690	67	.637		
	Total	53.943	69			
Marital status	Between Groups	.487	2	.243	1.006	0.371 NS
	Within Groups	16.213	67	.242		
	Total	16.700	69			
Level of Education	Between Groups	.883	2	.441	.756	0.473 NS
	Within Groups	39.117	67	.584		
	Total	40.000	69			
Occupation	Between Groups	1.758	2	.879	1.703	0.190 NS
	Within Groups	34.584	67	.516		
	Total	36.343	69			
Financial status	Between Groups	.158	2	.079	.356	0.702 NS
	Within Groups	14.927	67	.223		
	Total	15.086	69			

Table (5) Relation between (Age, Marital status, Level of Education, Occupation Financial status) and depression in adolescents with type 1 diabetes mellitus

SOV=Source of Variance, SS= Sum of Squares, MS=Mean of Score, F. Obs= Fisher Observation, DF= Degree of Freedom, S = Significant, NS= No Significant.

This table (5) show that there were no significant differences in most demographical characteristics of the study sample, but that there were highly significant relationship between a symptoms of depression and age of adolescent at P. value ≤ 0.05.

Table (6) Relation between gender and depression in adolescents with type 1 diabetes mellitus

Items	Gender	No.	X	S.D	T. obs	P ≤ 0.05
Depression	Male	38	2.05	0.567	0.517	N.S
	Female	32	2.28	0.457		
F. Critical = 0.424, DF= 68						

No.=number of sample, X=Mean, S.D= Standard deviation, DF= Degree of Freedom, N.S= No Significant.

The table (6) show that there were no significant differences between depression symptoms and gender of the study sample at P. Value ≤ 0.05.

Discussion

The current study shows that 70% of adolescents with type 1 diabetes have depression with at risk rang, also

need to put in sight the different sociodemographic factors affecting adolescent . In regarding to gender relation to depression, the current study showed a no significant association between sex and degree of depression symptoms. The sex variance can be explained by genetics choose, the disorder of neurotransmittersystems and overbalance in reproductive hormones. Psychosocial risk factors might also be involved in explaining the sex variance.[13]

Study conducted by Grey., et al. [14]found that the thorough prevalence of depressive symptoms was 17, depressive symptoms were more common in the earlier years post diagnosis, less common between 4-9 years after diagnosis and rose still after 10 years, else like studies reported variation frequencies; Lawrence., et al. [15] declare 22.8% where Center for Epidemiological Studies-Depression Scale (CES-D) >16 (the clinical cutoff), Zdunczyk., et al.[16] notify 39% had depressive symptoms (CDI > 13) (the clinical cutoff),The variations in the prevalence of depression in world with diabetes suggest international variations in prevalence, how symptoms of depression are reported.[17] However Herzer and Hood [18] reported 21% had CDI score > 13 (the clinical cutoff). Variation in the scoring system used and the clinical cutoff value, also Herzer and Hood [18] establish that 13.4% and 17% of adolescents who had a diagnosis of type 1 diabetes reported condition and nearly 21% of adolescents had CDI (as a measure of depression) scores ≥ 13 (the clinical cutoff). Intensive treatment with numerous insulin injections and frequent self-blood glucose monitoring especially with longer diabetes period be inverted the burden of treatment and progress disease that can excess negative emotions and maladaptive behaviors.[19]Also, there are indicated shared predisposing and precipitating factors between diabetes and depression, both conditions show familial cohort proposition possible genetic influence or shared environments impact disease pathogenesis and progression.[20]Nouwen., et al. [21]stated that diabetes manifest to be a risk factor for depression. About 25-50% of depressed youth have comorbid anxiety disorders. Results of the current study revealed no significant association between degree of depression gender, educational level or socioeconomic standard ($p > 0.05$). Other study came in concordance Hood., et al.[22] The age of onset of diabetes and diabetes duration were significantly correlated with degree of depression. These findings indicate that the degree of depression were likely a result of the difficulties happen in living with Type 1diabetes and its stressors, and amassed load of problems related to longstanding diabetes including; restriction of social life, physical disturbances,to some extent limitations in physical activity, daily discomfort in managing diabetes, emotional distress and concern aboutlong-term complications.

Conclusion

The majority of study sample were suffered from depression symptoms have (at risk range) among adolescent with T1DM, also there were a significant relationship between a symptoms of depression and age of adolescent. Learning of early signs and symptoms of depression can help families and adolescent to expose them and ask for vocational staff to help and corroboration. Treatment of these psychological problems in diabetic adolescents should receive considerable attention, healthcare staff should schedule care in a way that psychosomatic enhanced, definite encouragement and compliance to medication could be promote.

Financial Disclosure: There is no financial disclosure.

Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the Psychiatric & Mental Health Nursing and all experiments were carried out in accordance with approved guidelines.

References

1. Dantzer C. Anxiety and depression in juvenile diabetes: a critical review". Clinical Psychology Review. 2003; 23: 787-800.
2. Delamater AM, de Wit M, McDarby V, Malik J, Acerini CL; International Society for Pediatric and Adolescent Diabetes. ISPAD Clinical Practice Consensus Guidelines 2014. Psychological care of children and adolescents with type 1 diabetes. Pediatr Diabetes. 2014; 15:232-44.
3. Araujo MB and Mazza CS. Assessment of risk factors of poor metabolic control in type 1 diabetic children". Pediatric Diabetes. 2008; 9: 480-487.
4. De Wit M, Snoek FJ. Depressive symptoms and unmet psychological needs of Dutch youth with type 1 diabetes: results of a web survey. Pediatr Diabetes. 2011; 12: 172-176.

5. Anselmi L, Fleitlich-Bilyk B, Menezes AM, Arau´ jo CL, Rohde LA. Prevalence of psychiatric disorders in a Brazilian birth cohort of 11-year-olds. Soc Psychiatry Psychiatr Epidemiol. 2010;45: 135-42.
6. Bachle C, Stahl-Pehe A, Rosenbauer J. Disordered eating and insulin restriction in youths receiving intensified insulin treatment: Results from a nationwide population-based study. Int J Eat Disord 2016;49:191–6.
7. Young V, Eiser C, Johnson B, et al. Eating problems in adolescents with type 1 diabetes: A systematic review with meta-analysis. Diabet Med 2013;30:189–98.
8. McGrady ME, Laffel L, Drotar D. Depressive symptoms and glycemic control in adolescents with type 1 diabetes. Diabetes Care.2009; 32: 804-806.
9. Hassan K, Loar R, Anderson B. the role of socioeconomic status, depression, quality of life, and glycemic control in type 1 diabetes. J Pediatrics.2006; 149: 526-531.
10. Hood KK, Huestis S, Maher A. Depressive Symptoms in Children and Adolescents with Type 1 Diabetes: Association with diabetes-specific characteristics. Diabetes Care.2006; 29: 1389-1391.
11. Polanczyk GV, Salum GA, Sugaya LS, Caye A, Rohde LA. Annual research review: a meta-analysis of the worldwide prevalence of mental disorders in children and adolescents. J Child Psychol Psychiatry. 2015;56:345-65.
12. Maria Kovacs. "The children's depression inventory: a self-rated depression scale for school-aged youngsters". University of Pittsburgh. School of Medicine. Western Psychiatric Institute and Clinic (Pittsburgh, Pa.) Publisher: Pittsburgh, PA: University of Pittsburgh School of Medicine, Department of Psychiatry, Western Psychiatric Institute and Clinic. 1983.
13. Leach LS. Gender differences in depression and anxiety across the adult lifespan: the role of psychosocial mediators". Social Psychiatry and Psychiatric Epidemiology. 2008; 43: 983-998.
14. Grey M., et al. "Depression in type 1 diabetes in children: Natural history and correlates". Journal of Psychosomatic Research. 2002; 53: 907-911.
15. Lawrence JM. Prevalence and correlates of depressed mood among youth with diabetes: the SEARCH for Diabetes in Youth study". Pediatrics. 2006; 117: 1348-1358.
16. Zduńczyk B. High prevalence of depressive symptoms in well-controlled adolescents with type 1 diabetes treated with continuous subcutaneous insulin infusion". Diabetes/Metabolism Research and Reviews. 2014; 30: 333-338.
17. Lloyd CE. Epidemiology of depression in diabetes: international and cross-cultural issues". Journal of Affective Disorders. 2012; 14: S22-S29.
18. Herzer M, Hood KK. "Anxiety symptoms in adolescents with type 1 diabetes: association with blood glucose monitoring and glycemic control". Journal of Pediatric Psychology.2010; 35: 415-425.
19. Fisher L. The confusing tale of depression and distress in patients with diabetes: a call for greater clarity and precision". Diabetic Medicine. 2014; 31: 764-772.
20. Dunkel-Schetter C, Tanner L. "Anxiety, depression and stress in pregnancy: implications for mothers, children, research, and practice". Current Opinion in Psychiatry. 2012; 25: 141-148.
21. Nouwen A. Type 2 diabetes mellitus as a risk factor for the onset of depression: a systematic review and meta-analysis". Diabetologia. 2010;53: 2480-2486.
22. Hood KK. Depressive symptoms in children and adolescents with type 1 diabetes: Association with diabetes-specific characteristics". Diabetes Care. 2006; 29: 1389-1391.
23. Cho E. Psychological characteristics of Korean children and adolescents with type 1 diabetes mellitus". Annals of Pediatric Endocrinology and Metabolism 2013;18: 122-127.
24. Katon W. Behavioral and clinical factors associated with depression among individuals with diabetes". Diabetes Care. 2004; 27: 914-920.