Depression InType2 Diabetic Patients In Al-Diwaniyah Teaching Hospital

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الخلاصة

الخلفية

الاكتئاب يوجد عاده كحاله مرضيه في أمراض صحية مزمنة بشكل عام ، وداء السكري بشكل خاص. المرضى الذين يعانون من مرض السكري هم أكثر احتمالا بمعدل الضعف للمعاناة من الاكتئاب بالمقارنة مع السكان عموما. وقد قيل ان العلاقة بين الاكتئاب والسكري ثنائية الاتجاه أساسا. ان علاج الاكتئاب ليس فقط يحسن أعراض الاكتئاب، ولكن قد يكون له أيضا تأثيرأيجابي على السيطرة على نسبة السكر بالدم. وبالتالي،فإنه من المفيد بالنسبة للأطباء التعرف وعلاج الاكتئاب على نحو كاف في مريض السكري.

أهداف الدراسة

1. لتقدير معدل أنتشارالأكتئاب في مرضى السكري النوع الثاني في مستشفى الديوانية التعليمي.
2. قياس شدة الاكتئاب في هؤلاء المرضى.
3. لتقدير معدل الاكتئاب في مرضى السكري النوع الثاني في ما يتعلق ببعض المتغيرات الأجتماعيه والديموغرافية (العمر،الجنس، الحالة الاجتماعية،المستوى التعليمي، المهنة والإقامة).
4. لمعرفة العلاقة بين الاكتئاب وبعض متغيرات السكري (مدة المرض، السيطرة على نسبة السكر في الدم، نوع العلاج وبعض مضاعفات مرض السكري).

المرضى والطرق.

شارك 100 مريض عراقي مصاب بداء السكري النوع الثاني مقارنة مع 100 شخص من عامة السكان كمجموعة تحكم في دراسة مقطعيه خلال الفترة من 20 يونيو 2014 إلى10 فبراير 2015 في عيادة السكري في مستشفى الديوانية التعليمي، المشاركون بعمر 20 عاما و أكثر ، وأجريت مقابلات معهم باستخدام:

1. جدول المقابلة شبه المنظمة على أساس ICD-10 (النظام العالمي لتصنيف الأمراض العاشر) المعاييرالتشخيصية للأكتئاب (النسخة العربية التي ترجمت وكانت تستخدم في السابق من قبل باحثين آخرين). الملحق الأول.
2. مقياس بيك الثاني لقياس شدة الأكتئاب. والتقييم هو تقييم ذاتي ويقع في ثلاث فئات: الأول 10-18= خفيف والثاني 19-29 = متوسط والثالث 30 - 63= شديد . الملحق الثاني.
3. الاستبيان الاجتماعي والديموغرافي. الملحق الثالث.

والبيانات تم تفسيرها وتحليلها باستخدام الحزمة الإحصائية للعلوم الاجتماعية النسخة 18

النتائج

أظهرت النتائج ان معدل انتشارالأكتئاب في مرضى السكري النوع الثاني كان 44٪ مقارنة مع 16٪ في المجموعة الضابطة وكانت هذه النتائج ذات دلالة إحصائية. وكان معدل الاكتئاب أعلى بين الإناث،المتزوجات، ربات المنزل،الذي كانوا في المرحلة الثانوية من التعليم ،وضمن الفئة العمرية (50-59)،المرضى الغير مسيطرين على نسبة السكر في الدم،والمرضى المصابين لمدة طويلة والمرضى على علاج الأنسولين والمرضى الذين يعانون من مضاعفات القلب والأوعية الدموية. وكان معظمهم يعيشون في المناطق الحضرية،مع شدة متوسطة من الاكتئاب.

الاستنتاجات

الأكتئاب هو أكثر شيوعا في مرضى السكري النوع الثاني من الأفراد العاديين. وهذا يشير إلى الحاجة إلى المزيد من الاهتمام والكشف عن هذه الحالات التي تلعب دورا في حالة المريض جسديا وعقليا.

Abstract:

Objectives: Depression is commonly found as a comorbid condition in chronic medical illnesses in general, and diabetes mellitus (DM) in particular. Patients with diabetes are twice as likely to suffer from depression as compared to the general population. The aims of the study were to estimate: the prevalence of depression in type 2diabetic patients and its severity, the rate of depression in type 2 diabetes in relation to socio-demographic variables, and to find out the correlation of depression with some diabetes variables

Methods:100 Iraqi patients with type 2 DM compared with 100 persons from general population as control group participated in across sectional study. Participants were interviewed using: a semi-structured interview schedule based on ICD-10, diagnostic criteria for depression ,Beck depression inventory II for severity of depression and socio demographic questionnaire.

Results: The prevalence rate of depression in type 2 diabetes was 44%. The rate of depression was higher for females, married, housewife ,those of secondary level education, in age group(50-59),those of poor glycemic control, with long duration of diabetes, in patients on insulin and those with cardiovascular complication.

Conclusions: Depression is more common in type2 diabetic patients than in normal individuals. This will necessitate the need for more attention and screening for such conditions, which plays a role in the patients state physically and mentally.

Keywords: Depression, Type 2 diabetes mellitus.

Introduction:

DM type 2 is a metabolic disorder that is characterized by hyperglycemia in the context of insulin resistance and relative lack of insulin[1]. Type 2 DM makes up about 90% of cases of diabetes, withthe other10% due primarily to type1DMand gestational diabetes[2]. Depressionis a common psychiatric disorder, characterized by a persistent lowering of mood, loss of interest in usual activities and diminished ability to experience pleasure [3]. Clinical depression is a serious illness that involves the body, mood, and thoughts .It is often a disabling disease that affects a person's work, family and his study, sleeping and eating habits, general health and ability to enjoy life. The course of clinical depression varies widely: depression can be a once in a life-time event or have multiple recurrences, it can appear either gradually or suddenly, and either last for few months or be a life-long disorder. Depression is a major risk factor for suicide[4].

A number of studies including meta-analyses have shown the link between diabetes and depression.The comparison of both diabetic depressed and non-diabetic depressed groups showed that there were statistically significant differences in quality of life between the two depressed populations. In general, the effect of depression on the quality of life is greater than the influence of diabetes[5].The direction of the relationship between depression and diabetes is still unclear. The new opinion in recent studies is based on two questions: Whether diabetes is a risk factor for depression or people with

depressive symptoms are at a high risk of developing diabetes. A number of studies have shown that depression predicts the onset of serious conditions including heart disease, cancer, stroke as well as diabetes[6,7]. Also,
depression might be contributed to poor disease outcomes through physical inactivity[8]. There is growing evidence suggesting that depression can directly stimulate the production of pro inflammatory cytokines[9],or inflammatory factors such as C-reactive protein that influences a spectrum of conditions such as type 2 diabetes[10]. One of the hypothesized mechanisms is the high prefrontal glutamate levels that may play an important role in the genesis of the depression in diabetes patients[11]. The second hypothesis is that depression in patients with both type 1 and 2 diabetes result from chronic psychosocial stressors of having chronic medical condition[12].

Due to the severe impact of diabetes on the quality of life, screening and treating depression are important for daily clinical care to improve health outcomes for people with diabetes[5].Treatment has significant positive effects on mood and the quality of life, as well as useful effects on glycemic control [13]. Interventions, which increase
exercise activity and improve the glycemic control may also decrease the depressive symptoms.Finally, it should be noted that optimal treatment of depression in patients with diabetes may require a comprehensive approach that couples the specific depression treatment with focused efforts to improve the glycemic control[13].

Aims of the study:

Were to estimate: the prevalence of depression intype2 DMand its severity ,its relation to socio-demographic factors (age ,gender,marital status, educational level ,occupation and residency)and to find out the correlation of depression with some diabetic variablesduration,(glycemic control, type of treatment and diabetes complication).

Patients and methods:

100 Iraqi patient (50 male and 50 female) with type 2 DM compared with 100 persons from general population as control group participated in across sectional study during the period from 20thJune–20thFebruary inDiwaniyahTeaching Hospital which is the main government owned hospital that serve the large majority of people in Diwania Province.Participants age was≥ 20 years, data collection was done. Ethical clearance and informed consent were obtained from all participants.

They were interviewed by using :A semi –structured interview schedule based on ICD-10, diagnostic criteria for depression ,Beck depression inventoryIIto measure the severity of depression. The assessment is a self-rating and fall into three categories;I- Mild = 10-18 ,II-Moderate=19-29, III- severe = 30-63 and socio- demographic questionnaire.

Statistical analysis:

Data were subjected to statistical analysis using the Statistical Package for the Social Science (SPSS-version 18) program, and chi square association test was used. P value of ≤ 0.05 was considered statistically significant.

Results:

the results are expressed in the following tables:

Table 1: Socio-demographic factorsof type 2 DMand control groups:

Characteristic	Diabetic Group				Control Group			
	Male	female	Total	%	Male	Female	Total	%
Sex	50	50	100		50	50	100	
Age groups								
20 - 29	2	2	4	4	2	2	4	4
30 - 39	6	8	14	14	2	6	8	8
40 - 49	10	12	22	22	8	12	20	20
50 - 59	18	18	36	36	16	24	40	40
60 & more	14	10	24	24	22	6	28	28
Marital state								
Single	8	4	12	12	12	6	18	18
Married	36	40	76	76	26	34	60	60
Widows, widowers	4	4	8	8	4	6	10	10
Divorced	2	2	4	4	8	4	12	12
Education								
Illiterate	6	14	20	20	6	10	16	16
Primary School	14	14	28	28	16	20	36	36
Secondary School	20	16	36	36	18	10	28	28
College / Institute	6	4	10	10	8	6	14	14
Post graduate	4	2	6	6	2	4	6	6
Occupation								
House wife	0	34	34	34	0	32	32	32
Civil servant	30	14	44	44	34	18	52	52
Unemployed	12	0	12	12	8	0	8	8
Retired	4	2	6	6	2	0	2	2
Laborer	4	0	4	4	6	0	6	6
Residence								
Urban	40	44	84	84	44	48	92	92
Rural	10	6	16	16	6	2	8	8

Table 2. Rate of depression in type 2DMand control groups.

It demonstrates that 44% of type 2 diabetic patients had depression compared with 16% among the control, this differences is statisticallyhighlysignificant.

Rate of depression	Diabetic group		Control group	
	No.	%	No.	%
Depressed	44	44	16	16
Not depressed	56	56	84	84
Total	100	100	100	100

X^2=18.67, Df = 1 , P-value = 0.000016.

Table3. Rateofdepression inDM and control groups according to age:

46%of depressed type 2 DMand44%of the depressed control groups fall into age group (50-59) years.

Age (years)	Depressed diabetic group						Depressed control group					
	Female		Male		Total		Female		Male		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
20 - 29	2	7	1	6	3	7	1	10	0	0	1	6
30 - 39	3	11	2	12	5	11	1	10	1	17	2	12
40 - 49	5	18	3	19	8	18	2	20	1	17	3	19
50 - 59	13	46	7	44	20	46	4	40	3	50	7	44
60& more	5	18	3	19	8	18	2	20	1	17	3	19
Total	28	64	16	36	44	100	10	62.5	6	37.5	16	100

$X^2 = 0.03$,Df = 4 , P value = 0.9

Table 4. Rate of depression in type 2 DM and control groups according to marital state:

71%, of married diabeticsshow depression compared with 44% of married control persons.This is statistically not significant.

Marital status	Depressed diabetic group						Depressed control group					
	Female		Male		Total		Female		Male		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Single	2	7	2	12.5	4	9	2	20	1	17	3	19
Married	20	71	11	69	31	71	5	50	2	33	7	44
Divorced	3	11	1	6	4	9	2	20	2	33	4	25
Widows, widowers	3	11	2	12.5	5	11	1	10	1	17	2	12
Total	28	64	16	36	44	100	10	62.5	6	37.5	16	100

$X^2 = 4.50$,Df = 3 , P = 0.21

Table 5. Rate of depression in type 2 DMand control groups according to sex:

The depressionin type 2DM was 44%,it was higher in female 64% than in male 36%, in control cases 16% ,were higher in female 62.5% than in male 37.5%.This is statistically not significant.

Sex	Diabetic group						Control group					
	Depressed		Not-depressed		Total		Depressed		Not-depressed		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Male	16	36	34	61	50	50	6	37.5	44	52	50	50
Female	28	64	22	39	50	50	10	62.5	40	48	50	50
Total	44	44	56	56	100	100	16	16	84	84	100	100

$X^2 = 0.01$,Df = 1 , P = 0.93

Table 6. Rate of depression in type 2 DM and control groups according to educational level:

Secondary school level of type 2DM constituted the majority of depression 39%, while post graduate constituted the minority 5%. For control group, secondary school level constituted the majority of depression 37.5%. This is statistically not significant.

Education	Depressed diabetic group						Depressed control group					
	Female		Male		Total		Female		Male		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Illiterate	5	18	3	19	8	18	1	10	1	16.7	2	12.5
Primary School	8	28.5	5	31	13	29	3	30	1	16.7	4	25
Secondary	12	43	5	31	17	39	4	40	2	33.2	6	37.5

School												
College/ Institute	2	7	2	13	4	9	1	10	1	16.7	2	12.5
Post-graduate	1	3.5	1	6	2	5	1	10	1	16.7	2	12.5
Total	28	64	16	36	44	100	10	62.5	6	37.5	16	100

X^2 = 1.57, Df = 4 , P value = 0.81

Table7: Rate of depression in type 2 DM and control groups according to the occupation:

Depression of type 2DM has been distributed from high to low percentage among different occupations ; house wife 45%, civil servant 27%, unemployed 14%, retired 9%, laborer5%. While in control group housewife37.5% constituted the majority followed by civil servant and unemployed patients 25% for each., this is statistically not significant

Occupation	**Depressed diabeticgroup**						**Depressed control group**					
	Female		**Male**		**Total**		**Female**		**Male**		**Total**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Housewife	20	71	0	0	20	45	6	60	0	0	6	37.5
Civil servant	3	11	9	56	12	27	2	20	2	33	4	25
Unemployed	3	11	3	19	6	14	1	10	3	50	4	25
Retired	1	3.5	3	19	4	9	0	0	0	0	0	0
Laborer	1	3.5	1	6	2	5	1	10	1	17	2	12.5
Total	28	64	16	36	44	100	10	62.5	6	37.5	16	100

X2 = 3.67, Df = 4 P-value = 0.45

Table 8. Rate of depression in type 2 DM and control groups according to the residence:

86% of depressed type 2 DM were from urban area, 14% were from rural area , and 87.5% of depressed control group were from urban area, 12.5% were from rural area

Residence	**Depressed diabetic group**						**Depressed control group**					
	Female		**Male**		**Total**		**Female**		**Male**		**Total**	
	No.	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**	**No.**	**%**
Urban	24	86	14	87.5	38	86	9	90	5	83	14	87.5
Rural	4	14	2	12.5	6	14	1	10	1	17	2	12.5
Total	28	64	16	36	44	100	10	62.5	6	37.5	16	100

X^2= 0.01Df = 1 P value = 0.90

Table 9: Severity of depression in type2 DMand control groups defined by Beck Depression Inventory II (BDI):

50%of type 2 DM were of moderate severity,39% mild and11% severe, while 44% of depressed control group was moderate, 37%mild , and 19% severe. This is statistically not significant.

Severity of depression	**Depressed patients**		**Depressed control**	
	No.	**%**	**No.**	**%**
Mild (10-18)	17	39	6	37
Moderate (19-29)	22	50	7	44
Severe (30-63)	5	11	3	19
Total	44	100	16	100

X^2=0.58 ,Df =2 , p = 0.74

Table10: Relationshipbetween depression and glycemic control(GlycatedHbA1c).

75% of depressed diabetics were with poor glycemic control ,25% with good glycemic control which is statistically significant.

Glycemic control (HbA_{1c})	Depressed		Non depressed		Total	
	No.	%	No.	%	No.	%
< 6.5	11	25	27	48	38	38
≥ 6.5	33	75	29	52	62	62
Total	44	100	56	100	100	100

X^2 = 5.64Df = 1 P value = 0.01

Table 11: Relationship between depression and duration of DM:

27% of depressed patients were with duration of diabetes ≤ 5 year.73%of depressed patient with duration of diabetes > 5 year. This is statistically not significant.

Duration of DM (year)	Depressed		Non depressed		Total	
	No	%	No	%	No	%
≤ 5	12	27	20	36	32	32
> 5	32	73	36	64	68	68
Total	44	100	56	100	100	100

X^2 = 0.81 Df = 1 P- value = 0.36

Table 12. Relationship between depression and type of treatment:

41% depressed patients were on insulin, while 36% on oral hypoglycemic drugs, and 23% on combineddrugs (insulin + oral hypoglycemic). This isstatistically highly significant

Types of treatment(drugs)	Depressed		Non depressed		Total	
	No	**%**	**No**	**%**	**No**	**%**
Oral hypoglycemic	16	36	44	78	60	60
Insulin	18	41	6	11	24	24
Combined Insulin + Oral hypoglycemic	10	23	6	11	16	16
Total	44	100	56	100	100	100

X^2= 18.90 ,Df = 2, P- value = 0.000079..

Table-13: Relationship between depression and complication of DM:
Depression is more in patients with cardiovascular complication 27% followed by autonomic neuropathy and diabetic Foot 18% for each. This is statistically significant

Complication of DM	Depressed		Non depressed		Total	
	No	%	No	%	No	%
No Complication	2	4.5	14	25	16	16
Retinopathy	6	14	4	7	10	10
Nephropathy	2	4.5	4	7	6	6
Neuropathy	6	14	6	11	12	12
Cardiovascular	12	27	4	7	16	16
Autonomic neuropathy	8	18	16	29	24	24
Diabetic Foot	8	18	8	14	16	16
Total	44	100	56	100	100	100

$X^2 = 15.33$ Df = 5 P- value = 0.009

Discussion:

The main finding of this study is the high prevalence of depression in type 2 diabetic patients 44%. This is highly significant, and is consistent with other studies[44],[14].

The result appear higher than the result of other studies [15][16],[17], [18]. This finding may be attributed to many factors:higher level of health education about diabetes, different stressful and environmental circumstances, different study design used in each study.

Depression was more in diabetic women than diabetic men. This may be due to high levels of stressful conditions, tensions related to cultural and social background, hormonal factors and childbirth, other possible explanation is that women life subject them to circumstances causing depression ,women play many roles which expose them to increase responsibility, also women seek more psychological support when she feels depressed .

Related to age the result is similar to other study [15]which show high percentage of depression in the age group (50-59)46% for diabetic , and 44% of control. This may be due to lack of support and poor utilization to the health system .

Regarding marital status, depression are more among married diabetics71% and married control person44%.Which is not significant. This result is similar to study done by Roupa et al[19]. This may be due to worry about the future, responsibility about their children and may have no confiding relationship with spouse. The prevalence was expected to be higher in divorce ,widows as they lack social support and this is inconsistent with our study and persons who live alone are more vulnerable and face great risks

than persons who live with others. Family acts as protective factor ,in Iraq, most of single, divorce, and widowed lives with their families.

In relation to education level, it was found that high prevalence of depression in diabetics with secondary school level and control 39%,and 37.5% respectively. The same result was revealed byLeone T, study[20]. This may be related to large data of primary school ,secondary school and illiterate sample compared with small data of college/ institute and post graduate, and the more educated patient the more self-care, more consult, more information about his illness.

Concerning the occupation, depression is more in diabetics and control housewife 45%, and 37.5%respectively. This may be due to, housewives partly socially isolated, spend most of their leisure time at home, and more restricted by presence of children.

For residency, depression is more in urban diabetics 86%,than rural14%. This may be due to hospital situation(in city center) likely to be used by the residents of the city ,or patient from rural area do not consult for their complaint due to far distance, ignorance, cost unless they are very ill.

In regard to the severity of depression, most of depressed diabetics and control were of moderate severity50%and44% respectively. This is statistically not significant.

Higher cases73% of depression were found in diabetics with duration of disease(>5 year)and 27% with duration <5year but this is statistically not significant. This may be due to long duration of diabetic, more stress , more complication, more social isolation, decreased productivity and low self-esteem. This result is in agreement with Lin EH,Rutter CM. [21] .

Concerning glycemic control, it was found that high prevalence of depression 75% with poor glycemic control (GlycatedHbA1c>6.5),while only25% with good glycemic control (GlycatedHbA1c<6.5).This is statistically significant. This may be due to more complication , more stress, more hospitalization, decreased activity and productivity, low self-esteem and more social isolation.This is in agreement with that of Richardson et al. [22] .Eren I[23]Lustman[24].

The study found that depression is more in patients oninsulin41%thanin patients on oral hypoglycemic drugs 36% and patients on combined treatment23%. The explanation is that patients on insulin may have poor glycemic control, so more complication, more stigma, more stress ,more depressed mood. This result is in agreement with other study [25].

It had been found that 4.5% of participants with depression had no complications ,and common complications with depression (cardiovascular 27% ,autonomic neuropathy 18%,diabetic foot 18% and retinopathy 14%.This may be due to frequent hospitalization, pain, social isolation, low self-esteem, decreased activity and productivity .This result is not consistent with other study [25] .

In conclusions depression is more commonintype2 DM than in healthy individuals, the rate of depression was higher for females, married, housewife , secondary level of education, age group(50-59),those with poor glycemic control ,with long duration of diabetes, in patients on insulin and patients with cardiovascular complication .Most of

them live in urban area .This will necessitate the need for more attention and screening for such condition which play a role in the patients state physically and mentally

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