

THE ASSOCIATIONS AND EFFECTS OF DEPRESSION, COST OF TREATMENTS AND MARITAL, WORK PROBLEMS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS IN RELATION TO THE DEGREE OF CONTROL.

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ABSTRACT

Diabetes mellitus is not just an increase in blood sugar, rather it's an medical condition that affect the protein metabolism, neuronal integrity, cardiovascular, beside its effect on the well-being of human in their social life.

The aim of study: Is to study the social, psychological and economic effects of type 2 diabetes mellitus on an individual level in relations to the degree of control.

Patients and method: Of One hundred Sixty patients, Ninety Eight (61.2%) were female and Sixty Two (38.8%) were male, all participants being diabetic for at least 5 years were enrolled in this cross section study their ages range from thirty six to sixty five, their mean ages 48.40 ± 7.91 years, from January to December 2016. All patients are type 2 DM on different types of treatment whom consults Al-Mawani General Hospital, Diabetic and endocrine center. Two questionnaire sheets were made by examiner and distributed to all patients, the first containing questions regarding patients age, job, cost of treatment and type of drugs used, frequency of tests of blood glucose, HbA1c, lipid profile, cost of transport, the total cost of monthly treatment, type of job, absence from work, difficulty in home work, level of HbA1c in the last 3 months of the interview. The second questionnaire made by researchers with the modified for the eight classical symptoms of depression.

Results: Only fourth (28.1%) patients from the total presented with score of symptoms of depressions and this was strongly related to the degree of control of their diabetic measured by HbA1c, with 95% CI of the Difference (0.55-1.57) with p value (0.01) , neither the cost of treatment 95% CI (-32.28-13.10) with p value (0.71) nor the type of occupations, 95% CI of the Difference (-0.29 -0.28) with p value (0.92) respectively affected by this degree of control. Though the marital problems were statistically significant between both sexes with p value (0.00), it shows no significant difference (p value 0.55) to the degree of control of diabetes.

Conclusion: Depression should be considered seriously in type 2DM, though not related to the cost, work types, gender its strongly related to the degree of control of diabetes.

KEYWORDS: Type 2 DM, Depression & Treatment Cost

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INTRODUCTION

Management of diabetes, a disease which is assuming epidemic proportions, remains a challenge despite the availability of several guidelines; one of the major concerns is the social and economic consequences of the diseases. According to International Diabetes Federation (IDF) 2015 estimates, globally 415 million people are

suffering from diabetes and this figure may reach up to 642 million in 2040 (1). The prevention and treatment of DM imposes a burden on the patient, their family and on the health authorities. Cost of treatments, direct or indirect, the absence from work and decrease in time of work due to disability and early retirement. (2). Researchers using a simulation model have put a price on the direct medical costs of treating diabetes and its complications, during a lifetime, in the United States. The figure ranges from around \$55,000 to \$130,000, depending on age at diagnosis and sex, with the average being \$85,200. (3) Dealing with diabetic complications and their treatments increases costs (4). Studies in India estimate the cost of adult diabetic patient as around 25% of income of family and around 10% in the USA. (3) Other research was used to estimate costs for diabetes care, such as physician visits and self-testing devices, and for treatment or hospitalization for diabetes complications such as end-stage renal disease, stroke, and CHD. (3) The lifetime costs were higher for younger people, who have a longer time to develop complications, and for women, who have fewer complications but tend to live longer than men. Data on direct costs of medical treatment, lost time or absence (e.g., absenteeism, short term disability, worker compensation), lost performance at work as part of a health risk assessment questionnaire. (5, 6, and 7) In addition, the increase incidences of depression further complicates the managements of diabetic patients. Depression was significantly associated with a high mortality risk in T2DM patients, so surveillance identify risk factors for depression might contribute significantly to reducing mortality risk in this group of patients. (8) The link between both diseases, diabetes and depression may be multifactorial, though the etiological associations, may play major role in this collaborations, in that T2DM had 24% increased risk of depression compared to non-diabetic control in some studies. (9, 10) Living with diabetic imposed daily challenges to patients and their family, anxiety, depression experienced by the sufferer's and the guilt experienced by them and their family further complicate the severity of the disease and the psychological upset that may complicate the situation. There is some uncertainty about the prevalence of diabetes mellitus in the Iraqi population. Iraq has undergone rapid economic development. In December 2011, the International Diabetes Federation reported that, of the ten countries with the highest prevalence of diabetes in adults aged 20–79 years, six were in the Middle East. Iraq is considered as having a medium prevalence (9.3%) of diabetes in the Middle East based on surveys from 2006 to 2007. (11) Various studies demonstrate the effect of diabetes on quality of health of type 2 DM patients, in Iraq some study deal with this entity which demonstrates the associations with depressions (12, 13)

This study aims to demonstrate the correlation between control of diabetes mellitus reflected by the degree of glycosylated hemoglobin and its effect on job and marital and psychological problems.

Patients and Methods

One Sixty type 2 DM patients invited to participate in this study which conducted at Al-Mawani Teaching Hospital in Basrah, Southern of Iraq during the Period from January to December 2016, All Are Type 2 DM on different Type of Treatment, They Were Diabetics for at Least Five Years. Moral agreements for the participation took directly for each patient. Through their usual consultation for diabetic and endocrine center, were routine examination for their fasting blood sugar, glycosylated hemoglobin, lipid profile done in each visit. Two separated questionnaires sheet distributed to each patient and filled by the patient and with assistant of examiner when needed, the first containing questions regarding patients age, job, treatment and type of drugs used, frequency of test of blood sugar, HbA1c, lipid profile, urine test, cost of transport, the total cost of monthly treatment of each patient, type of job, absence from work, difficulty in home work for those with no job, level of HbA1c in the last 3 months of the interview. The second questionnaire made by the examiner which contain

The eight neuro-vegetative symptoms of depression (Sleep disorder (increased or decreased), Interest deficit, Guilt (worthlessness hopelessness), Energy deficit, Concentration deficit, Appetite disorder (decreased or increased), Psychomotor retardation or agitation & Suicide attempt), that can be easily remembered with the mnemonic (SIGECAPS), which used by psychiatry residents at Massachusetts General Hospital (where it was devised by Dr. Carey Gross). (14,15), we calculate these symptoms according to its presence or absence as participant mentions and to meet the diagnosis of major depression, a patient must have four of the symptoms plus depressed mood, for at least two weeks. And this was accepted criteria for diagnosis of depression in systemic disease. We calculated the individual cost by the summation of monthly cost of each treatments, investigation and interference if present and treatment. Marital problems, absence from work calculated as the frequency of occurrence.

Data were feed to the SPSS version 16 and Continuous variables were summarized as the mean \pm SD. Categorical variables were summarized as percentages. For statistical analysis a chi-square test was used. A comparison of 2 means was carried out with an unpaired Student t test. The level of significance was set to be <0.05 throughout the analysis. This study was approved by the department of medicine, Basrah College of medicine.

RESULTS

Table1: characteristics of study population, the distribution of gender, type of job, mean ages, mean glycosylated hemoglobin (HbA1c): Mean ages (48.40 ± 7.91) years, mean cost (113 ± 43.00) and mean glycosylated hemoglobin (8.29 ± 1.65), which indicate in late productive period, average cost of managements and generally not control diabetes of the study group. The frequency of occurrence of sex were Female 98(61.2%), Male 62(38.8%), 74 (48.2%) controlled and 86(53.8%) uncontrolled, 36(22.5%) experience marital problems and 124 (77.5%) not, work problems occurs in (16.9%) and not in (83.1%), cost treatments in (41.9%) and (58.1%) no costly and (28.1%) score for depressive symptoms and (71.9%) not. Depend on approximation of population studied.

Table2: Both the means of age and cost of treatments shows no significant difference between the control and uncontrolled group 47.95 ± 7.95 versus 48.79 ± 7.91 for the age and means (1.10 ± 43.10) versus (1.15 ± 43.04) respectively, however the score of depression show significant difference between both group with mean score for the control 3.70 ± 1.73 and for uncontrolled 4.76 ± 1.53 .

Table 3: Sex difference was not significant in the control group 44 (59.5%) for female and 30 (40.5%) for male in comparisons to the uncontrolled group 54(62.8%) female and 32(37.2%) for male. The work problems was present in 12 (16.2%) and absent in 62(83.8%) in the control in comparisons to 15 (17.4%) 71(82.6%) for uncontrolled. Marital problem was present in 15 (20.3%) and absent in 59 (79.7%) in the control group in comparisons to their present 15 (20.3%) and absent 59 (79.7%) in control group in comparisons to 21 (24.4%) present and 65 (75.6%) absent in the uncontrolled group, the cost of treatments, the response was costly in 36(41.9%) and not costly in 31(41.9%) in the control versus costly 50(58.1%) and not costly 43(58.1%) in the uncontrolled. Depression score, shows the statistically significant difference which in the control 11(14.9%) yes and 63(85.1%) not in comparisons to 34 (39.5%) yes to 52 (60.5%) not in the uncontrolled group.

Figure1: shows that 14(8.8%) only one symptom, two 11(6.9%) three symptoms, 28(17.5%), four in 29(18.1%), five in 33(20.6%), six in 33 (20.6%), seven in 11(6.9%) and only one (0.6%) present with the cardinal symptoms of the score used for the diagnosis of depression.

Table1: characteristics of Study Population

Variable	Category	Value	P value
Age	Mean	48.40±7.91	
Cost of treatment	Mean	113.15±43.00	
HbA1c	Mean	8.29±1.65	
Job	Employed	59 (36.6%)	0.98
	Not employed	25(15.9%)	
	House wife	76(47.5%)	
Gender	Female	98(61.2%)	
Control of DM	Control	74 (48.2%)	0.38
marital problem	Absent	124 (77.5%)	0.000
Absence	No	133 (83.1%)	0.000
Cost	Costly	93 (58.1%)	0.04
Depression score	Not Present	115 (71.9%)	0.000
	Present	45 (28.1%)	

Table 2: Group Statistics: Age, cost of treatments and depression score with the degree of control by levels of Glycosylated Hemoglobin

Variable	HBA1c	N	Mean	Std. Dev.	Std. Error	P value
Age	>= 7.99	86	48.79	7.91	0.85	0.51
	< 7.99	74	47.95	7.95	0.92	0.51
Cost	>= 7.99	86	1.15E2	43.04	4.64	0.49
	< 7.99	74	1.10E2	43.10	5.01	0.49
Depression	>= 7.99	86	4.76	1.53	0.16	0.00
	< 7.99	74	3.70	1.73	0.20	0.00

Table 3: Effect of Diabetic Control according to the levels of HBA1c with variables Gender, marital problems, job, depression and cost of Treatments

Control	HBA1c	Yes 74 (46.2%)	Not 86 (53.8%)	P value
Gender	Female	44 (59.5%)	54(62.8%)	0.74
	Male	30 (40.5%)	32(37.2%)	
Work	Absent:	62(83.8%	71(82.6%)	0.74
	Present:	12 (16.2%)	15 (17.4%)	
Marital problems	Absent	59 (79.7%)	65 (75.6%)	0.57
	Present	15 (20.3%)	21 (24.4%)	
Symptoms of depressions	Absent	63(85.1%)	52 (60.5 %)	0.001
	Present	11(14.9%)	34 (39.5 %)	
Cost	Not	31(41.9%)	43(58.1%)	0.56
	Yes	36(41.9%)	50(58.1%)	

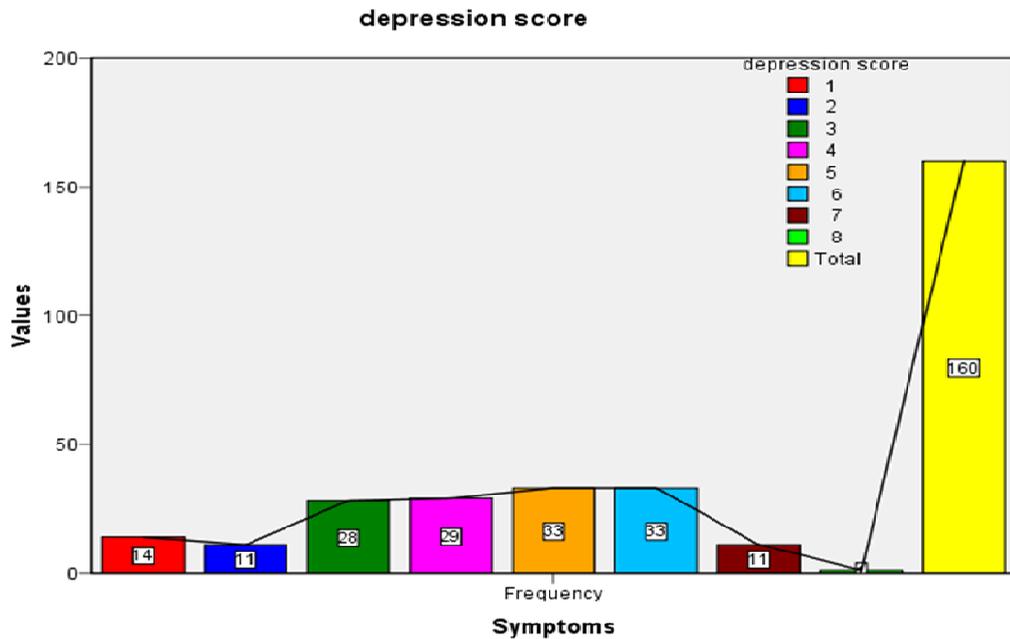


Figure 1: The Frequency of Symptoms of Depressions in the Population Study.

DISCUSSIONS

In this study which done mainly to estimate the associations between type 2 DM and the social aspects effects of the disease, occupational, family and psychiatric problems with duration more than five years. The results shows that all patients develops some of the depressive symptoms and significant proportion of them develops depression according to the criteria of diagnosis of depressive illness, which show the rate of occurrence (28.1%) which is similar to other study in this area. (12) This explain how diabetes can injure the patients mode and life, the degree of associations inversely related to the degree of control, this could be explained by the stress imposed by this systemic disease on insight of patients, on the other hand no significant gender, age, occupation and marital effects on this as a cofactors in this associations. In addition this may reflect the fact that the glycosylated hemoglobin is not a real test to assess the degree of control in this disease and we need other than this test to assess the degree of control.

Though marital problem is less concerned to the studied population especially in this area, only 22.5% reports marital problems, which may expected due to cultural values of the community, however female, male difference was found which was statistically significant difference between gender, only 30.6 % from female side and 69.4% in male side with p value of 0.000. The ages of the female patients (around menopause) with mean ages (48.02±7.40) years in comparison to the mean age of male patients(49.01±8.69) may explain this difference, in addition to the local social factors, however it's still with no significances difference in relations to the degree of control.

Experience of Problems in works only occurs in (16.9%) which shows significant difference in comparison with (83.1%) experience negatively, especially in those involved in governmental works, than those who involve in free job or house wife and no sex effects and not related to degree of control, still gender difference was significant, which shows male predominance of absence, (70.4%) in comparisons to (29.6%) in female. The shortage of jobs and the stress from the loss of jobs make patients try to be available on the job and avoid the absences from it. 41.9% of studied group demonstrate

high cost of treatment and follow up in comparisons of 58.1% who demonstrate low cost treatments, but this has not been affected by the degree of control, gender and type of jobs, however still may impose stress on patient life. The average cost of the treatment in an individual levels, with means of (113.15±43.00) considered similar to the cost of diabetic in India and USA population (16), in addition it shows no significant difference regarding the degree of control (p value: 0.49), being all the studied group depend to some of extent even partially on health authority hospital services probably has an effect on this results.

In conclusions: socioeconomic and psychiatric aspects in the managements of type2 DM should be considered seriously as these factors may adversely affect the quality of life if not directly affect the managements.

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