Psychiatric Morbidity In Iraqi Diabetic Patients
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Abstract:
Background: Diabetes mellitus is a chronic disorder characterized by impaired metabolism of glucose due to deficiency or ineffectiveness of endogenously excreted insulin, this chronic disorder is associated with late development of vascular, neurological and psychological complications.
Objectives: To determine the prevalence of psychiatric morbidity among the diabetic patients attending the diabetic clinics in Baghdad and to relate this morbidity to demographic state of those patients.
Method:
The study sample includes 80 patients 31 male, 49 female; it was carried out at the Baghdad Teaching Hospital, medical out patient clinic and in national centre for treating diabetes in Al-Yarmouk Teaching Hospital. The period of the study was for 1 year from 1st of June 2006 to 1st of June 2007, the age’s range of the sample is between 20-60 years, were included both types of diabetes mellitus. General health questionnaire and semi-structure interview in were adopted.
Results:
The prevalence of psychiatric morbidity among the diabetic patients attending the diabetic clinics in Baghdad (52.5%).
Among these psychiatric cases depression was found to be the 1st diagnosis (30%) followed by general anxiety disorder (22.5%).

Conclusions:
There is high psychiatric morbidity among the diabetic patients presented mainly as depression and general anxiety disorder, in addition to high physical complications. Further studies are recommended for confirmation.

Introduction:
Diabetes mellitus is a chronic disorder characterized by impaired metabolism of glucose and other energy-yielding fuels as well as by the late development of vascular and neurological complication.\(^1\)
Diabetes comprises a group of disorders involving distinct pathogenic mechanisms, for which hyperglycemia is the common denominator.
Regardless of its cause, the disease is associated with a common hormonal defect, namely, insulin deficiency, which may be total, partial, or relative when viewed in the context of coexisting insulin resistance. Lack of insulin effect plays a primary role in the metabolic derangements linked to diabetes, and hyperglycemia in turn plays an important role in disease-related complications.\(^2\)
Diabetes is classified in to 4 types: type1 which is insulin dependant more in young age patients; type2 the classical diet dependant in middle age patients; type3 is due to other specific conditions as genetic defects of B-cell function, pancreatic disease, viral infection and drug –induces; type4 is gestational diabetes.\(^1\)
Diabetes is associated with a high risk of psychiatric and physical morbidity. This physical morbidity is attributing to both the psychological effect of the illness and the physical complications which are wide develop and carry a high risk of physical handicap and mortality.
The physical complications are of 2 groups: those due to acute metabolic disorders as ketoacidosis and hypoglycemia and those due to chronic tissue damage includes vascular disorders, nephropathy, retinopathy, neuropathy, diabetic foot and erectile impotence with the serious risk of developing further life threaten disorders as coronary heart disease, limbs amputation, chronic foot ulcers, renal failure, blindness in addition to coma and death associated with acute metabolic disorders.\(^2\)
Psychiatric morbidity: is usually presented in behavioral and emotional disturbance and symptoms like weakness, irritability, fluctuated of mood etc….\(^3\) And in certain psychiatric disorders commonly anxiety and depressive disorder with a prevalence of 45% and 33% respect occur.\(^4\)
Psychiatric morbidity could be explained as due to physiological and metabolic changes associated with the illness or as a reaction to the presence of the illness with its associated hazard complications and also the psychological burden of the demand of the control of glucose level as dietary regulation and limitation of social functions etc….\(^5\)

Aims Of The Study:
1. To determine the prevalence of psychiatric morbidity among the diabetic patients.
2. To find out which type of psychiatric morbidity might predominate in diabetes mellitus patients.
3. To find out any correlation(s) between these psychological problems and the patient’s demographic state.

Methods:
The present study is cross sectional and carried out at two centers Baghdad Teaching Hospital, outpatient clinic, and national center for diabetic treatment, at Al-Yarmouk Teaching Hospital.

The sample randomly selected according to the base of the third selected patient (passes 2 patients and choose the 3rd one), the sample consists of 80 patients, and formal, written consent was obtained from each patients.

The period of the research was from 1st of June 2006 to 1st of June 2007. Age range 20-60 years, sex distribution 31 males’ 49 females; the sample consist of both types of diabetes mellitus.

The diabetic patients were diagnosed according to the diagnostic criteria for diabetes mellitus (and normality) recommended by WHO 2000, mentioned above.\(^{(1)}\)

The diagnosis was done by the patient’s physician, excluded diabetic patients with other physical disorders.

1. A modified Arabic version of general health questionnaire (G.H.Q.) was used.\(^{(6)}\)

This (G.H.Q.) was developed for detection of a probable case of psychiatric morbidity among community and primary care sample. Since its introduction it was subjected to validity study used in prevalence estimation applied in a variety of cultures and languages.\(^{(7)}\)

The best case/ non-case threshold on the (G.H.Q.) was found to be 4/5 and patients scored > 5 are referred to as General health question probable case.\(^{(6)}\)

2. Semi-structured psychiatric interview: to validate the General health.

Questionnaire, all general health Questionnaire (positive and negative) was examined. Then each patient was administered the 30-items general health questionnaire followed by semi-structured interview by the researcher of each patients. The results arranged and tabulated statistically by highly qualified community medicine specialist as a statistician.

Results:
The eighty attendants to the outpatient clinic had been selected randomly to participate in the study; all the patients completed the modified general health questionnaire version and the semi-structured psychiatric interview which based was on the diagnosis criteria of the international classification of the diseases 10 \(\text{ICD10}\)

Psychiatric morbidity:

- General health questioner status: there were 38 patients 46.5% (16 men, 20% and 22 women, and 27.5%) who scored >5 were considering as probable cases. The probable cases of men consist of 51.6% of the total men, while the probable cases of women consist of 44.8% the total women.
• Semi-structure interview: there were 42 patients 52.5% (15 men, 18.7% and 27 women, 33.75%) interpreted as cases. The cases of men consist of 48.3% of the total men, while the cases of women consist of 55.1% the total women.

To validate the general health questionnaire and the semi-structured psychiatric interview, and represent the statistical correspondence of the semi-structured interview to the general health questionnaire, used the value of the specificity and sensitivity of the two instruments. (See table 1)

Sensitivity of the test: it’s the ability of the test to correctly identify cases.

\[
\text{Sensitivity of the test} = \frac{\text{No. Of the true positives}}{\text{No. Of the true positives} + \text{false negative}} \times 100
\]

\[
= \frac{34}{34 + 8} \times 100 = \frac{34}{42} \times 100 = 80.9\%
\]

Specificity of the test: it’s the ability of the test to correctly identify non-cases.

\[
\text{Specificity of the test} = \frac{\text{No. Of the true negatives}}{\text{No. Of the true negatives} + \text{false positive}} \times 100
\]

\[
= \frac{34}{34 + 4} \times 100 = \frac{34}{38} \times 100 = 89.4\%
\]

So there are a high percentage of both of these values lead to validate the general health questionnaire and the semi-structured psychiatric interview, and represent the statically correspondence between them.

The cases that interpretation of the semi-structure interview were made according to the diagnosis criteria of the ICD10. (See table 2)

Psychiatric morbidity and its relation to:

Psychiatric morbidity was correlated with different demographical variables; the following variables include age, sex, marital state, employment and duration of illness:

1. Age: age range from 20-60 years, the mean age of the sample is 40, (for men 39.9 and for women 32.8)

Mean age of the cases is 46. Mean age of the non-cases is 44.

The highest psychiatric morbidity is in age group range from 40-49 years. (See table 3)

2. Marital status: the number (no.) of widowed 13, the no. of single 18, the no. of married 35, the no. of divorced 11, and the no. of separated 3; about 43.75% of the patients were married; psychiatric morbidity was more among the widowed, married, and divorced patients. Depression and anxiety state were more in single than married patients. (See table 4)
3. Employment: the number (no.) of employment 18, the no. of student 9, the no. of housewife 28, the no. of retired 16, and the no. of unemployment 6; about 57.5% of the sample was consisting of employed and housewife.

The psychiatric morbidity was more in the unemployed and retired than other, depression was more in unemployed, housewife and retired. (See table 5)

4. Duration of the illness: the mean duration of diabetes is about 10.5 years (for male 11.4 years and for female 9.7 years). The shorter duration of the illness in diabetic patient was 8 month and the longest duration of the illness in diabetic patient was 20.4 years. The mean duration of illness in cases about 10.1 years.

The mean duration of illness in non-cases about 12.5 years.

The highest percentage of psychiatric morbidity is in patients having duration of illness between 11-15 years. (See table 6).

5. Physical complications: about 38 patients 47.5% (16 male and 22 female) have had physical complications. The highest physical complication in male was sexual impotence then followed by cataract, while the highest physical complication in woman was nephropathy followed by cataract.

Three patients have had three types of physical complications; eleven patients have had two types of physical complications and twenty-four patients have had one type of physical complications.

- 15 patients scored > 5 in general health questionnaire as probable cases.
- 19 patients interpreted as cases in semi-structured interview.

About 45.2% of psychiatric cases have had physical complications.

Also about 50% of non-psychiatric cases have had physical complications. There was strong relation ship between psychiatric morbidity and sexual problems (impotence) in man and cataract for both sexes. These physical complications diagnosed by their physicians in the research places. (See table 7).

Table (1): The validation table between General health questionnaires and Semi-Structured interview.

<table>
<thead>
<tr>
<th>General health questionnaire</th>
<th>Semi-Structured interview</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cases</td>
</tr>
<tr>
<td>Probable cases</td>
<td></td>
</tr>
<tr>
<td>True positive</td>
<td>34</td>
</tr>
<tr>
<td>False positive</td>
<td>4</td>
</tr>
<tr>
<td>Not Probable cases</td>
<td></td>
</tr>
<tr>
<td>False negative</td>
<td>8</td>
</tr>
<tr>
<td>True negative</td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>42</td>
</tr>
</tbody>
</table>

Table (2): The distribution of psychiatric disorders among the diabetic cases (according Semi-Structured interview).

<table>
<thead>
<tr>
<th>Diagnosis According to ICD10</th>
<th>No.</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Generalized anxiety disorder</td>
<td>9</td>
<td>22.5</td>
</tr>
<tr>
<td>Depression</td>
<td>13</td>
<td>30</td>
</tr>
<tr>
<td>Phobia (agoraphobia)</td>
<td>6</td>
<td>14.2</td>
</tr>
</tbody>
</table>
The highest psychiatric morbidity was present as depression (30%), then followed by generalized anxiety disorder, also equal percentage for Phobia (agoraphobia) and Drug and Alcoholism Dependence (14.2%), less percentage for Adjustment disorder (11.9%), and the lowest percentage for psychosis (7.1%).

Table (3): The relationship between age group and psychiatric morbidity.

<table>
<thead>
<tr>
<th>Age group</th>
<th>Sex</th>
<th>Total</th>
<th>%</th>
<th>General health questionnaire</th>
<th>Semi-Structured Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>No.</td>
<td></td>
<td>Probable Cases</td>
<td>Cases</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No.</td>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>20-29 Years</td>
<td>Female=8 Male=5</td>
<td>13</td>
<td>16.25</td>
<td>4</td>
<td>30.7</td>
</tr>
<tr>
<td>30-39 Years</td>
<td>F=12 M=7</td>
<td>19</td>
<td>23.75</td>
<td>6</td>
<td>31.5</td>
</tr>
<tr>
<td>40-49 Years</td>
<td>F=15 M=11</td>
<td>26</td>
<td>32.5</td>
<td>18</td>
<td>69.2</td>
</tr>
<tr>
<td>50-59 Years</td>
<td>F=14 M=8</td>
<td>22</td>
<td>27.5</td>
<td>10</td>
<td>45.4</td>
</tr>
</tbody>
</table>

The highest psychiatric morbidity was present among age group 40-49 (67.9%), then followed by age group 50-59 (50%) and the other groups less percentage.

Table (4): The relationship between psychiatric morbidity and marital state

<table>
<thead>
<tr>
<th>Marital State</th>
<th>Total</th>
<th>%</th>
<th>General health questionnaire</th>
<th>Semi-Structured Interview</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>Probable Cases</td>
<td>Cases</td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Single</td>
<td>18</td>
<td>22.5</td>
<td>7</td>
<td>38.8</td>
</tr>
<tr>
<td>Married</td>
<td>35</td>
<td>43.75</td>
<td>18</td>
<td>51.4</td>
</tr>
<tr>
<td>Divorced</td>
<td>11</td>
<td>13.75</td>
<td>4</td>
<td>36.3</td>
</tr>
<tr>
<td>Widowed</td>
<td>13</td>
<td>16.25</td>
<td>8</td>
<td>61.5</td>
</tr>
<tr>
<td>Separated</td>
<td>3</td>
<td>3.75</td>
<td>1</td>
<td>33.3</td>
</tr>
</tbody>
</table>

The highest psychiatric morbidity was present in Widowed (61.8%), then followed by Divorced (54.5%), and the lowest in Separated.
Table (5): The relationship between psychiatric morbidity and occupational state.

| Job       | Total | %    | General health questionnaire Probable Cases | | Semi-Structured Interview Cases |
|-----------|-------|------|--------------------------------------------|| No. | %    | No. | %    |
| employed  | 18    | 22.5 | 8                                          | | 44.4 | 9    | 50  |
| student   | 9     | 11.25| 4                                          | | 44.4 | 4    | 44.4|
| housewife | 28    | 35   | 13                                         | | 46.8 | 15   | 53.5|
| retired   | 16    | 20   | 8                                          | | 50   | 9    | 56.25|
| unemployment | 6  | 11.25| 5                                          | | 55.5 | 5    | 55.5|

The highest psychiatric morbidity was present in retired (56.25%), unemployment (55.5%), and housewife (53.5%), and the lowest percentage in student (44.4%).

Table (6): The relationship between psychiatric morbidity and duration of illness.

| Total | %    | General health questionnaire Probable cases | | Semi-Structured Interview Case |
|-------|------|--------------------------------------------| | No. | %    | No. | %    |
| <1 year | 10  | 12.5                                      | | 4   | 40   | 5   | 50  |
| 1-5 years  | 14  | 17.5                                      | | 6   | 42.8 | 6   | 42.8|
| 6-10 years | 12  | 15                                        | | 5   | 41.6 | 5   | 41.6|
| 11-15 years | 22  | 27.5                                      | | 14  | 63.6 | 15  | 68.1|
| 16-20 years | 12  | 15                                        | | 5   | 41.6 | 6   | 50  |
| > 21 years   | 10  | 12.5                                      | | 4   | 40   | 5   | 50  |

The highest psychiatric morbidity was present in the duration of illness “between” 11-15 year (68.1%), and then followed by three same percentages <1 year, 16-20 year, >21 year (50%), and the other duration less percentage.

Table (7): The distribution of physical complications among the sample of diabetic patients.

<table>
<thead>
<tr>
<th>Complication</th>
<th>Male</th>
<th>Female</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nephropathy</td>
<td>3</td>
<td>7</td>
<td>10</td>
</tr>
<tr>
<td>Cataract</td>
<td>6</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Retinopathy</td>
<td>4</td>
<td>3</td>
<td>7</td>
</tr>
<tr>
<td>Sexual (impotence)</td>
<td>11</td>
<td>0</td>
<td>11</td>
</tr>
<tr>
<td>Neuropathy</td>
<td>5</td>
<td>3</td>
<td>8</td>
</tr>
<tr>
<td>Diabetic foot</td>
<td>5</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>
The highest physical complications were present of Sexual problem (impotence) and Cataract among male; also the highest physical complications were present of nephropathy and cataract among female.

Discussion:
There was no previous study of psychiatric morbidity of diabetes mellitus patients in Iraq (which consist of both types). There were previous studies of psychiatric morbidity in type 1 diabetes mellitus.\textsuperscript{(6)} Also thesis on prevalence of depression in diabetes mellitus.\textsuperscript{(8)} The result of the present study revealed that the prevalence of psychiatric morbidity is about 52.5\% of diabetic patients attending the diabetic clinics in sample. These numbers are higher when compared with other studies from other countries, e.g. 18\%.\textsuperscript{(9)} In other study using the same technique, the prevalence of psychiatric morbidity among diabetic inpatients that complain from other medical diseases was 23\%.\textsuperscript{(14)}, and 39\% in diabetic inpatients with neurological disorders.\textsuperscript{(10)} Other studies used different technique, in diabetic medical patients revealed that reported psychiatric illness ranged from 25\% to 83\%; certainly the variation depended on how psychiatric illnesses were defined and the type of patient’s choice.\textsuperscript{(11)}

When if comparing the results of present study with other studies it was found that our study showed the higher rate of prevalence this may be due to many factors like that we compare the study with other studies derived from developed countries; the psychiatric morbidity created by those health problems might be higher in developing countries due to low level of health education about diabetes, also the high rate due the limitations of the study, increased prevalence of psychiatric morbidity explain as due to different stressful and fearful security and environmental circumstances.

The psychiatric morbidity was mainly depression 30\%, anxiety 22.5\%.

This was relevant with another study conducted in Iraq which represented the depression rate 36\%.\textsuperscript{(8)} In other study of medical diabetic patients found that depression and anxiety were the commonest diagnosis; and the cases diagnosed as depression that was twice than that of the anxiety.\textsuperscript{(12)}

So when we compare the result from the present study with other studies we found that there were similarities in the results related to the psychiatric morbidity in diabetic patients.

Diabetic patients with psychiatric morbidity are mainly in middle age group” between” 40-49 year old in the present study. In community study; psychiatric morbidity had their peak occurrence between 25-44 years old in diabetic patients\textsuperscript{(13)} Also another study obtained the highest psychiatric morbidity in age group range from 25 - 34 years.\textsuperscript{(6)}

So when we compare the result from the present study with other studies we found there were similarities in result related to the psychiatric morbidity among age groups.
The psychiatric morbidity was more in women than men this may be due to the higher number of female compared to male in the sample and in Iraqi society, also may be due to high levels of stressful condition tensions the female related to cultural and social background in developing countries.

Also the psychiatric morbidity is more in widowed than other patients; this may be due to lack of family support as a result of loss of spouse. The depression and anxiety are
more in single patients compare to the married, which is significant, this is also may be due to lack of family support compared to the married patients.

Psychiatric morbidity regarding the job is more in the unemployed and retired than others, between (50%-55.5%), depression more in unemployed, housewife and retired patient, Anxiety is more in students in the present study. Another study: the psychiatric morbidity was more in unemployed patients.\(6\)

So when we compare result from the present study with another study found there were similarities in result.

The present study obtained about (45.2%) of psychiatric cases have physical complications. The physical complications in diabetic patients is about (40%) obtained from another study.\(6\)

So when we compare result from the present study with another study found there were similarities in result related to the distributions of physical complications among diabetic patients. It is well known that patients in developing countries represented with physical symptoms rather than psychological symptoms when they suffer from psychiatric disorders; because patients in these countries have no psychological education, also the doctors in these countries pay more attentions to patients when presented with physical rather than psychological symptoms, also may be due to low medical psychiatric services quantity in developing countries. This is probably the cause of high rate of physical complications.

Despite the fact that the result has important findings, there were some limitations that make it difficult to do some generalization of these results:

1. The sample needs to compare with control group to decrease the bias.
2. Environmental factor include security state and bad circumstances in our country lead to affect the period of the study as interrupted the study for long period and for many times.

Conclusions:
1. The present study concludes that the prevalence of psychiatric morbidity is about half of the diabetic patients attending to diabetic clinics.
2. The psychiatric morbidity was mainly depression and anxiety which account more than half of the total psychiatric diabetic patients; also psychiatric morbidity was mainly in middle age group “between” 40-49 year old.
3. More than one third of psychiatric cases have physical complications that lead to increase the prevalence of psychiatric morbidity in the present study.

Recommendations and Suggestion:
1. The prevalence of psychiatric morbidity in Diabetic mellitus patients needs more studies especially in Iraq as there has been little attention being paid to this subject.
2. The prevalence of psychiatric morbidity in Diabetes mellitus patient’s needs studies using other methodologies in research like case-control studies to minimize as much as possible the bias in studies.
3. This study indicated the importance of psychiatric education of diabetic patients and also medical professionals.
Reference:
5. Gale 1980 Hypoglycemia, Clinical in endocrinology and metabolism 9, 461-475.