

The prevalence of anxiety and depressive disorders in patients with diabetes

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Abstract

Introduction: Diabetes is a common chronic metabolic pathology that affects 7.3% of Moroccans. Many epidemiological studies have shown that diabetes and anxiety-depressive disorders are associated in a non-random way and complicate each other.

Materials and methods: We conducted a cross-sectional study to the prevalence of depressive episode and anxiety in diabetic patients, and to trace their sociodemographic and medical profile. The study included 130 patients from the diabetes endocrinology department and the diabetes consultation of the Avicenna Military Hospital of Marrakech. The scale used was the HADS (Hospital Anxiety and Depression Scale) in its Arabic version. Sociodemographic and diabetes characteristics were collected by hetero-questionary.

Results: The average age of our patients was 50.5 years, 52% were female. The prevalence of depressive disorder was 43% and that of anxiety disorder 50%. Data analysis showed some significant results by highlighting the factors associated with anxiety and depressive disorders: Factors related to sociodemographic characteristics (age and gender), socioeconomic characteristics (professional activity) and medical characteristics (Comorbidities, toxic antecedents and family antecedents of diabetes) characteristics related to the pathology itself (type and age of diabetes, its acute and chronic complications and the therapeutic regime).

Conclusion: The research and treatment of anxiety-depressive disorders in diabetic patients should be systematic in order to improve the management and prognosis of diabetes.

keywords: Diabetes; Anxiety; Depression; HADS

1. Introduction

Diabetes mellitus is the most common metabolic disorder affecting millions of people worldwide with a rapidly increasing prevalence globally and at an alarming rate, especially in the MENA (Middle East and North Africa) region [1]. According to the IDF (International Diabetes Federation), more than 573 million people have diabetes worldwide. This number is expected to increase to 643 million by 2030, and to 783 million by 2045 [2].

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Anxiety and depressive disorders are increasingly becoming a global concern. The WHO estimates that 280 million people suffer from depression, with a global prevalence of 3.51%. In Morocco, the prevalence of depression is estimated at 26.5% and that of generalized anxiety disorders at 9% [3].

The relationship between diabetes and anxiety disorders is bidirectional. Numerous epidemiological data show that diabetes and anxiety-depressive disorders, even more probably than in the case of other chronic somatic diseases, are associated in a non-random way, and complicate each other [4].

In order to better understand the complex links between anxiety-depressive disorders and diabetes, we conducted a study among diabetic patients followed by the team of the Diabetology and Metabolic Diseases Endocrinology Service of the Avicenne Military Hospital in Marrakech.

2. Materials and methods

2.1. Materials

Our work is a descriptive and analytical cross-sectional observational study that focused on type 2 and type 1 diabetic patients, followed in consultation or having been hospitalized in the Department of Endocrinology Diabetology and Metabolic Diseases at the Military Hospital Avicenne in Marrakech over a period between February 2022 and March 2022.

2.2. Inclusion criteria

- Consent after explanation of the study and its objectives.
- Confirmed type 1 and 2 diabetic subjects.
- There were no age and gender restrictions.
 - Exclusion criteria:
- Lack of consent.
- Patients with a history of depressive or anxiety disorder prior to diabetes diagnosis.
 - Ethical considerations:
- Patients were recruited for the study only after informed consent was obtained. Data collection was conducted with respect for anonymity and confidentiality of information.
- If the diagnosis of a depressive or anxiety disorder was made during the hetero-evaluation, the subject was referred to a specialized consultation.

2.3. Methods

2.3.1. Data Collection

Data collection was carried out using an exploitation form, elaborated by the work team. The questions were asked in Arabic and explained to the patients who did not attend school in dialectal Arabic.

It is a questionnaire divided into 2 sections

- 1st section: organized in 5 chapters dealt with: Identity, socio-economic and demographic situation, medical data: associated pathologies (hypertension, dyslipidaemia...), psychiatric disorders (type, age, treatment and follow-up), toxic and medicinal history, history of diabetes (age, mode of revelation, occurrence of complications.), treatment and follow-up modalities of diabetes
- 2nd section: the HADS (Hospital Anxiety and Depression Scale) in its Arabic version. The score consists of 14 items, seven of which concern anxiety symptoms and seven depressive symptoms. Each item was scored from 0 to 3, therefore, participants can obtain a score between 0 and 21 for anxiety or depression. Each subscale (anxiety score (HADS-A) or a depression score (HADS-D)) was scored as:
 - Normal: if the score is between 0 and 7 ;
 - Mild distress: if the score is between 8 and 10;
 - Moderate distress: if the score is between 11 and 14;
 - Severe distress: if the score is between 15 and 21.

The tool was self-administered, however, in case of illiteracy, the items and possible answers were read to the participant.

2.4. Statistical analysis

The data were entered and coded in Excel. Statistical analysis was then performed using the statistical analysis software SPSS (Statistical Package for Social Sciences (SPSS) for Windows, version 28.0.0.1).

- The descriptive analysis used the calculation of frequencies and percentages for the qualitative variables. Qualitative results were expressed as percentages and reported in graphs and tables.
- The univariate analysis used Pearson's Chi-square test to compare percentages. The significance level was set at 0.05.

3. Results

We recruited 100 diabetic patients of which 23% (n=30) of our patients were type 1 diabetics, while the majority of our patients were type 2 diabetics with a percentage of 77% (n=100).

The average age of our sample was 50.5 years, with extremes ranging from 7 to 80 years. The age group 30-60 years was the most represented with 50% or 65 cases (Figure 1) without gender predominance of which 67 (52%) were women and 63 (48%) were men (Figure 2). The sex ratio M/F is close to 1.

The majority of our patients had a low socio-economic status (<2800 dhs/month), i.e. 71% of our population, 24% had an average level of income and 10.84% had a high socio-economic level.

Family history of DT1 was found in 11 patients or 9% of all patients. DT2 was reported in 44 patients (34%). The notion of family psychiatric disorders was found in 3 cases or 2%.

The average duration of diabetes was 9.54 years, with a maximum of 35 years and a minimum of 15 days (figure 1). The state of equilibrium

Patients with microangiopathy had retinopathy in 19% of cases, diabetic nephropathy in 5% of cases, and no patient in our series had neuropathy.

Macroangiopathy was present in 6% of cases, of which 5% had coronary ischemia and 1% had obliterative arteriopathy of the lower limbs.

In terms of treatment, 79 patients (61%) in our sample reported compliance with dietary recommendations. Physical activity was practiced by 84 patients (65%). Their activities varied between housework, walking and gym.

Almost half of the patients (42%, n=55) were on oral antidiabetic drugs alone, 35% (n=27) were on insulin therapy alone, while only 26 patients in our series (20%) were treated with a combination of oral antidiabetic drugs and insulin therapy .

Seventy-three diabetics, that is, 57% of our sample, had a normal depression score, compared with 56 patients, or 43%, who had a pathological score. Sixteen patients had mild depression, 28 had moderate depression and 12 had severe depression [Table 1].

Half of our diabetic patients have a normal anxiety score, while the rest have a pathological score. Twenty-one subjects had mild anxiety, 24 had moderate anxiety and 20 had severe depression [Figure1].

Risk factors significantly associated with high HADS depression and anxiety scores were older age, female gender, occupational inactivity, cardiovascular risk factors, comorbidities, diabetes complications, and treatment with insulin therapy combined with non-insulin antidiabetics. Smoking, family history of type 1 diabetes, and dietary hygiene measures were protective factors significantly associated with lower HADS depression and anxiety scores. The type and the length of time of diabetes are not significantly associated with anxiety-depressive disorders [Table 2].

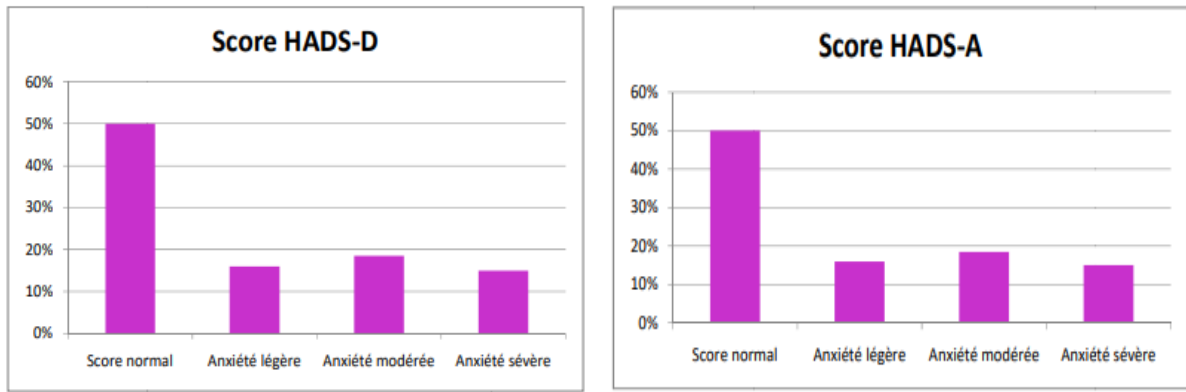


Figure 1 Distribution of patients according to HADS-A and HADS-D

Table 1 Global HADS results

Score		Participants	
		Numbers	%
HADS-D	0-7	74	57%
	8-21	56	43%
HADS-A	0-7	65	50%
	8-21	65	50%

Table 2 Correlation table

Parameters	Scores	P value
Female gender	Depression	<0.001
	Anxiety	0.009
Professional inactivity	Depression	<0.001
	Anxiety	0.019
Antecedents of hypertension	Depression	0.019
	Anxiety	0.023
Antecedents of dyslipidaemia	Depression	0.049
	Anxiety	0.004
Antecedents of ketoacidosis	Depression	0.012
	Anxiety	0.009
Type 1 diabetes	Depression	0.047
	Anxiety	0.024
Physical activity	Depression	0.002
	Anxiety	<0.001
Dual therapy (insulin + oral antidiabetics)	Depression	0.048
	Anxiety	0.024

4. Discussion

A growing number of studies in the international literature support the findings of this study that patients with diabetes have increased psychiatric morbidity [7, 8].

Our study showed that the prevalence of depression and anxiety symptoms were higher in diabetic women with HADS D ($p=0.007$) and HADS A ($p=0.001$) [Table 2], this result is consistent with another research [9]. This gender difference could be explained by the fact that women are more emotional than men [10]. Hormonal theory may also provide a useful framework for interpreting this result.

Age in our patients was associated with a high depression and anxiety score in a highly significant way ($p= 0.047$ and $p=0.12$ respectively). The older the patients, the higher their depression score, which can be explained by the physiological ageing that sets in with age as well as by the premature ageing secondary to diabetes and which concerns the different functions and organs. This is in line with the results of the literature [9- 11-12].

Regarding the professional status, this study noted that housewives and unemployed people were more at risk of developing symptoms of anxiety and depression than those who had a job [Table 2]. Other studies have confirmed the same [13,14]. Economic problems such as financial difficulties and poverty cause feelings of insecurity and increase the risk of anxiety and depression.

The length of time that people have had diabetes, according to our results, is not related to the depression and anxiety scores. In the literature, the data are contrasted. On the one hand, some teams have reported that a ten-year course of diabetic disease was a risk factor for depressive symptomatology [15]. M. Collins and Paenda Khan [9-16] have also reported that this symptomatology increases with the length of time diabetes has been present.

According to our results, there is a significant association between acute and chronic diabetic complications including diabetic ketosis and diabetic retinopathy and a high anxiety score (HADS A $p= 0.009$, Retinopathy $p= 0.015$) [Table 2]. This is in line with data from the literature which confirms that the prevalence of anxiety increases when patients suffer from complications of diabetic disease [9,16,17].

In terms of therapy, only dual therapy (Insulin in combination with non-insulin antidiabetics) was a risk factor for anxiety-depressive symptomatology in our patients ($p=0.021$) [Table 2]. This may be due to the fact that the addition of insulin in a former diabetic on oral antidiabetics is a source of anxiety.

Moreover, if diabetes is a risk factor for depression, depressive symptoms also have an impact on diabetes. Several studies have shown a link between depressive disorders and poor glycaemic control [18, 19]. In an American study involving 615 diabetics, depression was associated with an increase in HbA1c as well as with less adherence to treatment, as assessed by the Morisky questionnaire ($p<0.05$) [20].

In conclusion, the cross-sectional study we conducted revealed a high prevalence of anxiety-depressive disorders in our patients with diabetes. The analysis of sociodemographic and medical data revealed that the risk factors significantly associated with high depression and anxiety HADS scores are older age, female gender, professional inactivity, cardiovascular risk factors, comorbidities, diabetes complications and treatment with insulin therapy associated with non-insulin antidiabetics. Smoking, family history of type 1 diabetes, and dietary hygiene measures were protective factors significantly associated with lower HADS depression and anxiety scores. The type and the length of time of diabetes are not significantly associated with anxiety and depressive disorders.

5. Conclusion

Despite the numerous studies concluding the bidirectional causal link between diabetes and anxiety-depressive disorders, they often remain unrecognized and untreated. Our study was able to detect a remarkable frequency of anxiety-depressive disorders in our patients and highlighted the need to adopt a systematic screening tool for psychiatric disorders in the follow-up of diabetic patients. This automatically improves the reliable identification of patients with signs of depression and/or anxiety.

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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