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RESEARCH ARTICLE

PREVALENCE OF ANXIETY AMONG DIABETIC PATIENTS IN AL-MADINAH AL-MUNAWARAH, KSA 2021

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Key Message:
Socioeconomic Factors Contribute to the Anxiety and Depression of Diabetic Patients. So, there is a Need for Counseling and Therapies to Deal with Anxiety in Diabetic Patients

Abstract

Diabetes mellitus is a common disease among patients in Al-Madinah Al-Munawarah caused by a deficiency in insulin production in the pancreas. Diabetes is associated with an increased risk of psychological disorders such as depression and anxiety. Some sociodemographic factors such as age, gender, job, and education contribute to these psychological disorders. So, this problem seeks research to determine the anxiety among the diabetic patients of Al-Madinah.This study investigates the prevalence and predictors of anxiety among Type 2 Diabetes Mellitus patients in Al-Madinah Al-Munawarah, Saudi Arabia. In addition, this research aims to explore the effect of anxiety on glycaemic control in diabetic patients.This is based on a cross-sectional study in which only the patients of Al-Madinah Al-Munawarah primary health care centers are investigated to collect the data.Data entry and statistical analysis are performed with SPSS version 25, while the significance difference equal to or smaller than 0.05 is used to determine statistical significance in the conducted research. Results are given in three different tables, including socioeconomic data, clinical data, and predictors of anxiety and depression in diabetes patients.

In conclusion, diabetes affects your lifestyle and causes many issues, such as anxiety. This anxiety can lead to many other diseases, such as harmful eating habits, lack of regular exercise, smoking, and weight gain. If more problems control the patient's sugar level, it indicates that the patient suffers from anxiety.

Introduction:-

Diabetes mellitus is a chronic metabolic condition characterized by reducing or absent insulin synthesis in the pancreas [1]. Diabetes mellitus is classified into two types: type 1 and type 2. (T2DM). When a patient has a fasting plasma glucose level of 7.0 mmol/L, a plasma glucose value of 11.1 in a 2-h plasma oral glucose tolerance test of 75 g, or a glycated hemoglobin A1c level (HbA1c) of 6.5 percent, T2DM is clinically diagnosed [1]. It is well-known to engage in various ophthalmological, pulmonary, cardiovascular, neurological, and musculoskeletal hazards. According to the World Health Organization (WHO), 422 million individuals worldwide were diagnosed with diabetes in 2014, accounting for 8.5% of the population [2]. Diabetes mellitus will affect about 592 million persons globally by 2035 [3]. According to the WHO, diabetes mellitus among adults in Saudi Arabia is estimated to be 14.4% [4].

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Diabetes is linked to an increased risk of psychiatric illnesses, with depression and anxiety being two of the most prevalent comorbidities [5]. Many persons with diabetes and depression also have comorbid anxiety disorders, such as generalized anxiety disorder, panic disorder, or posttraumatic stress disorder. People with diabetes who do not have concurrent depression may develop anxiety problems [6].

When diabetes is eventually diagnosed, people with type 1 or type 2 diabetes may have increased anxiety, and diabetic consequences may appear first. Anxiety problems make living with diabetes and managing it more difficult in at least three ways:

1. Serious anxiety problems sometimes overlap with hypoglycemia symptoms; it may be difficult for a person with diabetes to distinguish between worry and low blood glucose symptoms that need prompt care.
2. When diagnosed with diabetes, pre-existing fear over injections or blood draws might escalate to severe anxiety or panic disorders.
3. Fear of hypoglycemia, a familiar source of worry for diabetics, may prompt some patients to keep their blood glucose levels above goal [7].

Excessive concern, restlessness, weariness, difficulty focusing, irritability, sleep disturbances, and muscular tension are signs of generalized anxiety disorder. Patients may get distressed if they encounter these symptoms daily for more than 6 months. Separation anxiety, panic disorder, and phobias are examples of other anxiety disorders [8].
In such circumstances, psychological and psychosocial examinations should be conducted. Psychological therapies may minimize emotional stress while reducing diabetic symptoms and improving prognosis. As a result, patients are advised to develop stress-coping skills via individual or group psychotherapy [9].
1- Diabetes is linked to a higher risk of psychological illnesses, with depression and anxiety being two of the most frequent.
2- Understanding disease-specific and generic risk factors make identifying patients at risk easier, which is critical for subsequent therapy.
3- Diabetic patients are more prone to depression and anxiety, and societal variables such as age, occupation, education, and gender all have a role in these mental illnesses.

General Objective:
To determine how common anxiety is among T2DM patients in Al-Madinah Al-Munawarah, Saudi Arabia, and what factors influence it.

Specific Objective:
1- To assess the prevalence of anxiety in diabetes patients regarding age, gender, educational attainment, and employment status.
2- To characterize the prevalence of anxiety and the factors that influence it.
3- To investigate the impact of anxiety on diabetes patients' glycaemic control.

Literature Review:-

A cross-sectional, multi-center study in four outpatient clinics in Karachi, Pakistan, an approach that aims to evaluate the prevalence of anxiety and depression and to identify their associated factors, including metabolic constituents among people with type 2 diabetes, found that reported that; overall, 57.9 percent (95 percent CI = 54.7 percent, 61.2 percent) and 43.5 percent (95 percent CI = 40.3 percent, 46.8 percent) of study participants had anxiety and depression respectively. The study participants were diagnosed with type 2 diabetes. Insufficient physical activity, high blood pressure, and ischemic heart disease were each shown to be independently related to the condition of anxiety. Being female, becoming older, having high blood pressure, and having ischemic heart disease were all substantially associated with depression. The systolic blood pressure, fasting blood glucose, and fasting blood triglyceride levels were the metabolic components independently related to anxiety and depression. There was an independent association between body mass index and depression [10] but not with anxiety.

Previous research conducted in the endocrinology outpatient department of an urban tertiary care center found a significant correlation between the HADS-Anxiety scale and Body Mass Index (BMI), with a correlation coefficient of 0.34 (P = 0.008). This research was conducted to determine the prevalence of anxiety and depression among outpatients receiving treatment for type 2 diabetes. In addition, the HADS-Depression scale and BMI exhibited a substantial degree of association. The amount of time spent engaging in physical activity daily was shown to have a

significant link with HADS-Anxiety levels. There was a correlation between HADS-anxiety ratings and HbA1c levels and postprandial blood glucose levels [11].

A tertiary care center in Northern India called Pt. B.D. Sharma, PGIMS, Rohtak, and Haryana, India, conducted a study to determine the prevalence of depression and anxiety in patients with Type 2 diabetes mellitus (T2DM). The researchers found that a significantly more significant proportion of diabetic patients had depression (26.3 percent vs. 11.2 percent, P = 0.001), anxiety (27.6 percent vs. 12.7 percent, P = 0.001), and depression affected diabetic women at a greater rate (17.1% compared to 9.3%), while anxiety affected diabetic women at a higher rate (17.6% compared to 10%). Age, being female, being on insulin treatment, having retinopathy or nephropathy, and having ischemic heart disease were the most significant predictors of severe sadness and anxiety in Type 2 Diabetes patients [12].

A study was done to determine the relationship between type 1 and type 2 diabetic patients and anxiety. The study found that the incidence of type 1 diabetic microvascular complications was higher among females than male patients. In contrast, the incidence of type 2 diabetic microvascular complications was higher among males compared to female patients, and the difference between these two groups was statistically significant. The Beck Anxiety Scale (BAS) findings used to analyze their psychological states revealed that 94.2% of male and 96.8% of female patients fell into severe anxiety. The BAS scores of patients diagnosed with type 2 diabetes mellitus were greater than those diagnosed with type 1 diabetes mellitus, both among male and female patients. When the distribution of BAS scores among the patients was analyzed, it was discovered that men earned a mean score of 44.713.2 points on the test, while females obtained a mean score of 47.013.0 points on the test. However, there was no statistically significant difference in the BAS scores of the sexes. In male patients, the difference between the length of time they had had the condition and their BAS score was statistically significant [13]. This was not the case for female patients.

Eighteen studies with a total population (N) of 4076 (2584 diabetic participants, 1492 controls) fulfilled the inclusion criteria, according to a systematic review to assess the prevalence of clinically significant anxiety in people with diabetes. Only one of the studies was community-based, and most did not account for the impact of moderator characteristics like gender. Fourteen percent of individuals diagnosed with diabetes also had a generalized anxiety disorder (GAD). The sub-syndrome presentation of anxiety disorder not otherwise described was detected in 27 percent of individuals with diabetes, and heightened anxiety symptoms were reported in 40 percent of these patients. The prevalence of elevated symptoms was similar in patients with type 1 diabetes and type 2 diabetes (41.3 percent vs. 42.2 percent, P=.80) [14]. The prevalence of elevated symptoms was significantly higher in women than men (55.3 percent vs. 32.9 percent, P.0001) and similar in patients with type 1 diabetes and type 2 diabetes.

Subjects and Methods:-

This study takes a "cross-sectional" approach. Al-Madinah Al-Munawarah is a city in western Saudi Arabia's Hejaz area. It is the capital of the Al-Madinah Province and is also known as Al-Madinah. Medina is presently home to more than 1,300,000 people and is considered Islam's second holiest city (2019). Medina is located around 340 kilometers (210 miles) to the north of Mecca and about 120 kilometers (190 miles) from the coast of the Red Sea. The region spans 589 kilometers in length and width (227 sq. mi).

Patients with diabetes visit primary healthcare centers in Al-Madinah Al-Munawara in Saudi Arabia.

Diabetic patients attending Healthcare centers in Al-Madinah Al-Munawarah, KSA, are included.

1. Non-diabetic patients
2. Non-conscious patients

They are excluded from this study.

We have calculated our sample size using standard online tools through the following formula ($N=(Z\alpha)^2 \times ([p(1-p)]/d^2$)

Where:

n = estimated sample size.

$Z\alpha$ at 5% level of significance = 1.96

d = level of precision and is estimated to be 0.05

p = High awareness levels in two previous studies (30%).

Actual sample size = (Primary sample size × design effect (estimated to be 1.5)
The expected response rate is estimated to be 80%.

Data were collected by offline questionnaire until a self-administered questionnaire covered the sample size after taking acceptance from the administration to distribute the questionnaire to all eligible participants. GAD-7 questionnairesare used to evaluate anxiety prevalence among diabetic patients. The questionnaire should be completed and returned to data collectors in the same session.

Interviews conducted by a professional nurse and hospital data are used to compile sociodemographic and clinical data. The Generalized Anxiety Disorder scale, often known as the GAD-7, is one of the diagnostic self-report measures used the most commonly for screening, diagnosis, and assessing the severity of anxiety disorder. Rarely have investigations been conducted on the psychometric features of the item from the perspective of the Item Response Theory paradigm.

The Generalized Anxiety Disorder (GAD-7) questionnaire is a self-report anxiety questionnaire that consists of seven questions. It is meant to evaluate a patient's state of health over the most recent two weeks. These items inquire as to the degree to which the patient has been bothered by feeling nervous, anxious, or on edge; not being able to stop or control worrying; worrying too much about a variety of things; having difficulty relaxing; being so restless that it is challenging to sit still; quickly becoming annoyed or irritable, and feeling afraid as if something might occur.

Data Analysis
Data entry and statistical analyses areperformed with (SPSS version 25). A significance difference equal to or smaller than 0.05 determines statistical significance in all conducted studies.

Descriptive statistics by the simple table arepresented as frequency. Percent of categorical and numerical data for the continuous outcome ispresented as mean and standard deviation, and the score is presented as median. The chi-square test tested the relation between (age, occupation, marital status, and educational level).

Results:-

Table 1:- Anxiety among type-II diabetic patients (n=200) of Al-Madinah Al-Munawarah about their sociodemographic data.

Characteristic	Total no (%)	Anxiety no (%)	P value	Odds ratio	95% CI
Sociodemographic data					
Age					
<25	20 (10%)	6 (3%)	0.32		
26-30	42 (21%)	18 (9%)	0.24	r	
31-35	18 (9%)	9 (4.5%)	0.56	0.76	(0.55-2.77)
36-45	72 (36%)	31 (15.5%)	0.54	0.05	(1.85-5.37)
≥ 50	48 (24%)	28 (14%)	0.344	1.76	(2.15-1.97)
Sex					
Male	127 (63.5%)	65 (32.5%)	0.076	0.75	(0.98-4.87)
Female	73 (36.5%)	32 (16%)	0.24	r	
Marital status					
Single	42 (21%)	13 (6.5%)	0.65	0.287	(2.45-5.47)
Married	139 (69.5%)	63 (31.5%)	0.44	r	
Widow\Divorced	19 (9.5%)	25 (12.5%)	0.76	2.67	(0.85-1.37)
Educational level					
<Secondary level	142 (71%)	54 (27%)	0.43	r	
>Secondary level	58 (29%)	32 (16%)	0.22	1.76	(1.95-2.97)
Income\expenditures					
Less	164 (82%)	13 (10%)	0.47	2.87	(2.87-3.37)
More	8 (4%)	4 (10%)	0.05	r	
Enough	28 (14%)	11 (10%)	0.33	3.51	(1.76-4.67)
Smoking					

Yes	84 (42%)	63 (6.5%)	0.77	r	
No	116 (58%)	99 (49.5%)	0.83	0.61	(2.55-4.27)
Living status					
With family	59 (29.5%)	42 (21%)	0.036	1.87	(0.99-2.34)
Alone	141 (70.5%)	76 (38%)	0.63	r	

Table 2:- Anxiety among type-II diabetic patients (n=200) of Al-Madinah Al-Munawarah about their clinical data.

Characteristic	Total no (%)	Anxiety no (%)	P-value	Odds ratio	95% CI
Clinical data					
Family history of a diabetic patient					
Yes	127 (63.5%)	84 (42%)	0.0001	r	(1895-2.37)
No	73 (36.5%)	116 (58%)	0.004	3.16	(2.95-5.87)
Duration of a diabetic patient					
3-5	65 (32.5%)	164 (82%)	0.019	0.71	(0.95-237)
5-10	84 (42%)	25 (14%)	0.097	r	(3.95-6.97)
>10	51 (25.5.5%)	11 (5.5%)	0.03	1.98	(2.95-4.87)
Treatment of diabetes					
Oral hypoglycaemic drugs	164 (82%)	55 (27.5%)	0.001	2.76	(2.45-3.17)
Insulin	32 (16%)	35 (17.5%)	0.0221	3.76	(2.95-4.67)
Both	4 (2%)	110 (55%)	0.0991	r	(1.05-2.17)
Conform to medications					
Yes	119 (59.5%)	99 (49.5%)	0.0881	r	(3.35-4.87)
No	81 (40.5%)	101 (50.5%)	0.0431	4.87	(2.95-2.97)
Conform to physical activity					
Less	110 (55%)	76 (38%)	0.091	r	(2.85-4.07)
More	72 (36%)	54 (27%)	0.01	4.66	(1.29-2.47)
Enough	18 (9%)	70 (35%)	0.031	5.24	(5.95-6.02)
Conform to daily foot examination					
Yes	59 (29.5%)	88 (44%)	0.071	2.64	(3.26-4.97)
No	141 (70.5%)	112 (56%)	0.001	r	(2.05-5.47)
Conform to daily sugar measurement					
Yes	128 (64%)	66 (33%)	0.091	r	(2.75-2.07)
No	72 (36%)	144 (72%)	0.0041	5.76	(4.95-6.87)
Retinopathy					
Yes	141 (70.5%)	87 (43.5%)	0.0551	r	(1.95-2.97)
No	59 (29.5%)	113 (56.5%)	0.0087	2.65	(1.95-2.97)
Neuropathy					
Yes	98 (49%)	74 (37%)	0.011	r	(1.95-2.97)
No	102 (51%)	126 (63%)	0.0003	5.34	(0.95-2.57)
Libido					
Yes	95 (47.5%)	94 (47%)	0.06	r	(3.55-2.77)
No	105 (52.5%)	106 (53%)	0.05	4.63	(2.45-2.67)
Family history of anxiety					
Yes	132 (66%)	82 (41%)	0.001	r	(4.04-5.17)
No	68 (34%)	118 (59%)	0.003	3.87	(0.65-2.27)

Table 3:- Predictors of Anxiety among type-II diabetic patients (n=200) of Al-Madinah Al-Munawarah.

Predictors	**B**	**S. E**	**Sig**	**Exp(B)**	**Lower**	**Upper**
Net. Income	-0.946	0.158	0.007	5.897	3.765	4.987
Family history of diabetes	-1.257	0.781	0.001	1.369	0.4577	1.877
Comply with physical activity	-1.046	0.810	0.079	0.681	2.768	3.689

Neuropathy	-0.272	0.447	0.098	1.018	1.685	2.983
Libido	-0.859	0.924	0.044	1.593	5.9861	6.555
Constant	-1.004	0.053	0.077	2.762	0.0911	1.3369

Discussion:-

Table 1 details the demographic characteristics of the participants. The sampling size was 250, and all people were approached for this study, but 200 people supported and provided complete responses and gave an 80% response rate. Their primary age was 47.9+7.6, and 58.3% were males. In this research, it is found that 40% of diabetic people suffer from anxiety. More, it is concluded that people with less than secondary education are at high risk of anxiety than those with higher education. One more risk factor and contributor to anxiety is low income. Other sociodemographics are also contributing to their anxiety, but not much.

Table 2 shows the results of the clinical data of 200 patients. The study also found that with the increase inthe duration of the patient's diabetes, anxiety also increased. It is also concluded that the treatment option for patients with diabetes also plays an essential role in increasing or decreasing anxiety. The patients on oral hypoglycaemic drugs and insulin suffered more from anxiety than those who only took hypoglycaemic drugs. In addition, more compliance with physical activity and diet is also associated with a lower risk of anxiety. Other factors such as medication compliance, regular foot examination, and daily blood sugar measurements did not contribute much to the anxiety. In addition, neuropathy and libido are also associated with increased anxiety. A family history of anxiety is a significant and influential factor in increasing anxiety.

Table 3 shows the predictors of anxiety among people with diabetes. It is found that the influential predictors are family history, physical activity, the presence of neuropathy, and libido.

Anxiety is frequently reported in diabetic patients. Therefore, this study is conducted to determine the prevalence of anxiety among the diabetic people of Al-Madinah Al- Munawarah, KSA. This study found that 67% of diabetic patients suffer from anxiety. Another study in the Jazan city of KSA reported 37.9% anxiety in diabetic patients. The difference in the ratio is due to the variations in the methodologies, screening tools, and culture. The correlation between anxiety and diabetes is due to the parallel biological functioning of the hypothalamic-pituitary gland. In addition, this study revealed an increase in the anxiety of diabetic patients due to low income, family history of anxiety, and low social support.

There is also a strong relationship between education and the anxiety of diabetic patients because educated people have better jobs and enough money to fulfill expenditures, so less depression and anxiety. Regarding the context of libido, it is found that patients with libido are at six times more risk of anxiety than those without libido.

In conclusion, diabetes affects your lifestyle and causes many issues, such as anxiety. This anxiety can lead to many other diseases, such as harmful eating habits, lack of regular exercise, smoking, and weight gain. If more problems control the patient's sugar level, it indicates that the patient suffers from anxiety.

Anxiety and diabetes are both harmful and decrease life satisfaction. As a result, there is a need for a comprehensive approach to managing both health issues. Management of both conditions requires the treatment of psychotherapy, including counseling, drugs, and variations in lifestyle. Serotonin reuptake inhibitors are highly recommended to cope with anxiety and depression.

Conclusion:-

Anxiety is prevalent among type 2 diabetes individuals who were investigated. Anxiety is a common side effect of diabetes mellitus. Glycaemic control may be improved by routinely screening for anxiety and treating depressive symptoms in diabetes patients. It is critical to begin therapy for this coexisting ailment as soon as possible to get a better result and a higher quality of life.

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Ethical Considerations
Informed consent isobtained verbally from all participants before participation, and acquired data will be kept confidential and private.

Limitations
Data collection from healthcare centers

Shortages of time and resources are essential limitations

Service
The researcher hopes to increase awareness of the association of anxiety among diabetic patients in Al-Madinah Al-Munawara.

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