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Original Article

Psychological Distress in Diabetic and Myocardial Infarction Patients in Erbil City- Comparative Study

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ABSTRACT

Background and Objectives: Psychological distress refers to a range of negative emotional experiences, such as anxiety, depression, and stress. Diabetes mellitus and myocardial infarction are two medical conditions that can have a significant impact on an individual's psychological well-being. Therefore, the study aimed to assess and compare psychological distress among diabetes mellitus and myocardial infarction patients in Erbil city.

Methods: A quantitative, comparative study design was conducted on 100 patients whom 50 of them were diabetes mellitus patients at Layla Qasim Health Center and the other 50 were myocardial infarction patients at the Cardiac Centre in Erbil city. The data was collected from 20th April 2022 till 24th May 2023.

Results: The result showed that less than half of myocardial infarction patients were old adults which is 42% between 57-68 years, married, illiterate and living in urban. On the other hand, less than half of diabetes mellitus patients were middle-aged adults, which is 42% between 45-56 years, married illiterate and living in urban. The ranges of the genders are equal with 50% being male and 50% being female. Also, more than half of myocardial infarction patients are non-smokers 52%, and 34% are smokers. In contrast, less than half of diabetes mellitus patients are 40% non- smokers, and 20% are smokers.

Conclusions: The majority of diabetic mellitus patients had a moderate level of depression. At the same time, anxiety and stress were extremely severe, and most patients with myocardial infarction had an extremely severe level of depression, anxiety and stress.

Keywords: Psychological Distress; Diabetes Mellitus; Myocardial Infarction; Patients.

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INTRODUCTION

Psychological distress is a common mental health problem in the community. It is a state of emotional suffering typically characterized by symptoms of depression, anxiety and stress. Patients with chronic diseases may experience negative emotions, such as depression. It is an unpleasant or emotional feeling that affects the functional capacity of individuals; psychological distress interferes with activities of daily living and easily results in negative views of one's self, others, and the environment around them [1]. Psychological distress is largely defined as a state of emotional suffering characterized by symptoms of depression, stress and anxiety [2]. Stress is a state of mental or emotional strain or tension that results from adverse or demanding circumstances [3]. Anxiety is the most common, or frequently occurring, mental disorder, which is characterized by restlessness and disturbance of thinking and behavior [4]. Depression is the most common mental health condition in the general population, characterized by sadness, loss of interest or pleasure, disturbed sleep or appetite, feelings of tiredness, and poor concentration [5]. Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar), which leads over time to serious damage to the heart, blood vessels, eyes, kidneys and nerves. The most common is type 2 diabetes, usually in adults, which occurs when the body becomes resistant to insulin or doesn't make enough insulin. In the past three decades the prevalence of type 2 diabetes has risen dramatically in countries of all income levels [6]. A heart attack, also called a myocardial infarction, happens when a part of the heart muscle does not get enough blood. The more time that passes without treatment to restore blood flow, the greater the damage to the heart muscle. Coronary artery disease (CAD) is the main cause of heart attacks. A less common cause is a severe spasm, or sudden contraction, of a coronary artery that can stop blood flow to the heart muscle [7].Depression is recognized as an independent risk factor for the development of myocardial infarction. The prevalence of psychological distress among MI patients is high, with depression existing in 70.7% of patients and anxiety symptoms (24%) [8]. Also, the prevalence of psychological distress in patients with DM ranges from 18 % to 52 % globally [9]. Myocardial infarction (MI) is a serious and potentially life-threatening disease, that has often been associated with significant anxiety and depression in patients. It causes substantial morbidity and mortality [10]. The estimated prevalence of depression in patients with chronic diseases ranges from 9.3 to 25% and patients with chronic diseases such as hypertension, coronary heart disease, and diabetes have a high incidence of depression. the depression and the cardiovascular risk are strongly correlated and many patients with chronic diseases have mental disorders, such as depression, because of the long-term nature of the disease and its impact on quality of life [11]. Anxiety after a myocardial infarction (MI) is common. Most of the MI patients showed ahigh level of anxiety immediately after the diagnosis of the disease both in western and eastern countries, namely; Australia, England, Japan, South Korea, and the United States. Similarly, in a study of the Norwegian population with MI, a higher level of anxiety in the initial phase (20%) was reported [12]. Some studies have reported that patients with diabetes are almost twice as likely to suffer from anxiety and depression as the general population and between 20% and 40% of people with T2DM experience feelings of anxiety, depression and stress [13]. Around 14% of people with diabetes have diagnosable general anxiety disorder and up to

40% have subsyndromal elevated anxiety levels. An emerging body of literature suggests that stress has a role in the etiology of type 2 diabetes mellitus (T2DM) both as a predictor of new-onset T2DM and as a prognostic factor in people with existing T2DM [14].According to the researcher's expectations in our society, psychological distress affects the immune system and the patient's health condition and thus leads to chronic diseases, especially diabetes and myocardial infarction. Therefore, researchers attempted to evaluate psychological distress among patients with diabetes and myocardial infarction in the city of Erbil and identify the main points between patients with diabetes and myocardial infarction.

METHODS

The present study is a quantitative, comparative study conducted to assess psychological distress (depression, anxiety, and stress) among diabetic and myocardial infarction patients in Erbil City. The formal arrangement was taken From the College of Nursing / scientific committee, also took permission from Layla Qasim Health Center, Hawler Teaching Hospital, Rizgary Teaching Hospital and Surgical Specialty Hospital-Cardiac Centre. The sample of the study was estimated at 100 patients from both Diabetes Meletus (DM) and Myocardial Infarction (MI) (50 Diabetic and 50 MI patients) in Erbil City, at the same time, 12 patients with DM and 11 patients with MI refused to participate in the present study. Regarding the inclusion criteria, there were diabetic and myocardial infarction patients of both genders and over the age of eighteen years old, while the exclusion criteria were; patients who had cancer or mental problem. The settings of the study were from Layla Qasim Health Center, Hawler Teaching Hospital, Rizgary Teaching Hospital and Surgical Specialty Hospital-Cardiac Centre in Erbil City. The study was conducted from 12th April 2023 to 20th June 2023 and the data was collected from 20th April 2022 to 24th May 2023. The data was collected through a questionnaire that consisted of two parts: Part one: Socio-demographic data (age, gender, marital status, occupational status, religion, living area, economic status, level of education, sleep quality, smoking state and high blood pressure) Part two; Depression, Anxiety and Stress Scale - 21 Items (DASS-21) is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. Each of the three DASS-21 scales contains 7 items, divided into subscales with similar content. The rating scale is as follows: (0, 1, 2, and 3):

0 did not apply to me at all.

1 applied to me to some degree, or some of the time.

2 applied to me to a considerable degree or a good part of time.

3 applied to me very much or most of the time.

Scales

The DASS yields three subscale scores for depression, anxiety, and tension/stress.

DASS Anxiety = 2 + 4 + 7 + 9 + 15 + 19 + 20

DASS Depression = 3 + 5 + 10 + 13 + 16 + 17 + 21

DASS Stress = 1 + 6 + 8 + 11 + 12 + 14 +18

Recommended cut-off scores for conventional severity labels (normal, moderate, severe) are as follows: Scores on the DASS-21 will need to be multiplied by 2 to calculate the final score [15].

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

The research followed the most recent version of the Declaration of Helsinki, and the study received ethics approval from the Human Research Ethics Committee at the Hawler Medical University/ College of Nursing under the code 10. The data was analyzed using the Statistical Package for Social Sciences (SPSS, Version 26), using two statistical analyses: Frequency and percentage descriptive data analysis, and independent samples t-test, mean difference, 95% confidence interval of the difference mean and standard deviation for comparative between both types of disease. For comparative analysis between mean of diabetic and myocardial infarction used a P-value of ≤ 0.05 was considered statistically significant.

RESULTS

The demographics of 100 patients with both myocardial infarction and diabetes mellitus are displayed in Table 1. The table also displays divinations among MI and DM patients with varying ages, genders, socioeconomic backgrounds, and quality of sleep. The ages of the participants ranged from 33 to 69. Patients aged 57 to 68, they made up the largest age group (42%) of those diagnosed with a myocardial infarction. The next tier, comprising 30% of the total, included those aged 45–56. Ages 69 and up accounted for 26% of those with the third stage of MI. The incidence of MI was lowest in those aged 33- 44 (2%). In contrast, 42% of people with DM fell within the age range of 45-56. Between the ages of 57 and 68 made up the next tier, representing 28%. People aged 69 and up had type 3 diabetes, representing around 16% of the population. The smallest percentage, 14%, came from ages 33 to 44. The mean age and standard deviation in MI were 61.54 ± 9.842 and in DM was 55.60± 10.087. Both males and females made up 50% of the MI and DM patient populations. Participants' marital status varied widely; for example, among those with MI, 90% were married, and 10% were widowed. In contrast, the majority of people with diabetes were married. In addition, 14% were either widowed. Patients with MI were more likely to live in an urban region (84%) than in a rural area (16%). Moreover, 92% of type 2 diabetes patients were city dwellers, whereas only 8% were residents of rural areas. Concern the level of education, of participants were largely illiterate (46%), with only 14% able to read and write. While 22% had completed high school, 8% had completed middle school, and 10% had completed colleges or universities. Patients with diabetes mellitus had the following educational attainment levels: (50%) do not know how to read or write, while (6%) do. 24% have only completed elementary school, 18 % have completed middle school, and 2% have completed high school and college). In Table 1. shows that just 28% of the MI participants were actively employed, while 72% were not, and 0% were retired. Cases of DM included people who were either working (14%), not working (76%), or retired (10 %). The table also includes the income of each person based on their profession. Most heart attack patients (84%), of them had high incomes (4%), had low incomes, (12%) fell within the middle class. Regarding the economic status of the study sample, had 2% had a very high income, the majority of them had somehow income, and 30 % were poor in economic statutes. Regarding the participant's personal health conditions, the table also shows some other criteria regarding their health. The quality of sleep reported by those with a MI was as follows: Patients were more likely to report good sleep quality (64%), fewer sleep problems (18%), and shorter sleep duration (18%). However, just 26% of DM patients reported poor sleep quality, 34%

reported sleeping difficulties, and 64% reported getting enough sleep. This table shows the percentage of smokers and nonsmokers within our patient population. There were more non-smokers (52%) than smokers (34%), passive smokers (8%) than smokers (34%), and former smokers (6%) among MI patients. While 40% of DM patients were never smokers, 18% were non-smokers, 20% were never active smokers, and 22% were never active ex-smokers. Patients with both MI and DM shared a common religious background: they were all Muslims. Last but not least, the table details whether or not any participants suffered from any additional chronic diseases. 54% of MI patients were disease-free, whereas nearly half had hypertension. Asthma affected 2% of the population. Despite this, more than half of the diabetic individuals 64 % were otherwise healthy. Hypertension affected 34% whereas asthma affected only 2%.

Table 1: Socio Demographic Characteristics of Study Participants.

Socio demographic characteristics		Myocardial Infarction Frequency (n=50)	Myocardial Infarction Percentage (%)	Diabetes Mellitus Frequency (n=50)	Diabetes Mellitus Percentage (%)
Age group (years)	33-44	1	(2)	7	(14)
	45-56	15	(30)	21	(42)
	57-68	21	(42)	14	(28)
	>69	13	(26)	8	(16)
	M ± SD	61.54 ± 9.842		55.60 ± 10.087	
Gender	Male	25	(50)	25	(50)
	Female	25	(50)	25	(50)
Marital status	Single	0	(0)	0	(0)
	Married	45	(90)	42	(84)
	Divorce	0	(0)	1	(2)
	Widowed	5	(10)	7	(14)
Residential area	Urban	42	(84)	46	(92)
	Rural	8	(16)	4	(8)
Level of education	Illiterate	23	(46)	25	(50)
	Read and write	7	(14)	3	(6)
	Primary school	11	(22)	12	(24)
	Secondary school	4	(8)	9	(18)
	Institute and college	5	(10)	1	(2)
Occupational status	Employment	14	(28)	7	(14)
	non-employed	36	(72)	38	(76)
	Retirement	0	(0)	5	(10)
Economic status	High income	2	(4)	1	(2)
	Middle income	42	(84)	34	(68)
	Low income	6	(12)	15	(30)
Sleep quality	Good sleep quality	32	(64)	20	(40)
	Difficulty sleeping	9	(18)	17	(34)
	Short sleep	9	(18)	13	(26)
Smoking Pattern	Non-smoker	26	(52)	20	(40)
	Passive smoker	4	(8)	9	(18)
	Smoker	17	(34)	10	(20)
	Ex-smoker	3	(6)	11	(22)
Religion	Muslim	50	(100)	50	(100)
Other chronic disease	Non	27	(54)	32	(64)
	Hypertension	22	(44)	17	(34)
	Asthma	1	(2)	1	(2)

Table 2 displays the prevalence of depression, anxiety, and stress among individuals with diabetes and myocardial infraction (MI). Five categories-normal, mild, moderate, severe, and extremely severe - are used to categorize the severity of depression. Less than half of the study sample had diabetes mellitus and 34% had moderate levels of depression. The lowest level of depression was 14% and it showed both mild and severe symptoms, while 16% of them had a normal level of depression. Among the patients, 22% had an extremely severe depression. The levels of depression among MI patients were as follows: 8 % of them had a normal and mild depression, 30 % had a moderate level of depression, 6 % had severe level, and 48 % had an extremely severe level, which was the highest percentage among them. In Table 2, the levels of anxiety were also displayed. Most DM patients (66%), who had extremely high levels of anxiety , had the lowest levels—moderate (4%), normal (6%) and mild (10%)-while (14%) of DM patients had extremely high levels of anxiety. Contrarily, the anxiety levels of MI patients varied widely, with 2 percent of them reporting normal anxiety, 6 percent reporting mild anxiety, 20 percent reporting moderate anxiety, 8 percent reporting severe anxiety, and 64 percent reporting the highest levels of anxiety. The levels of stress among DM patients were as follows: 10 % of the patients experienced both normal and moderate levels of stress. Only 2% of them had a severe level of stress; meanwhile, more than half (60%) had extremely severe stress. On other hand, the levels of stress among MI patients are also different; the normal to mild level were 2% and 6%. 20% had moderate stress levels, 24% had a severe level and highest level was extremely severe level of stress among MI patients was 48%.

Table 2: Depression, Anxiety and Stress Level Among Diabetic and Myocardial Infarction Patients

		Frequency (n=50)	Percentage (%)	Frequency (n=50)	Percentage (%)
Level of Depression	Normal	8	(16)	4	(8)
	Mild	7	(14)	4	(8)
	Moderate	17	(34)	15	(30)
	Severe	7	(14)	3	(6)
	Extremely Severe	11	(22)	24	(48)
Level of anxiety	Normal	3	(6)	1	(2)
	Mild	5	(10)	3	(6)
	Moderate	2	(4)	10	(20)
	Severe	7	(14)	4	(8)
	Extremely Severe	33	(66)	32	(64)
Level of stress	Normal	7	(14)	3	(6)
	Mild	5	(10)	1	(2)
	Moderate	7	(14)	10	(20)
	Severe	1	(2)	12	(24)
	Extremely Severe	30	(60)	24	(48)

Table 3 compares the averages for diabetes and myocardial infraction and displays the overall levels of stress, anxiety, and depression. The average level of depression in DM patients is 10.28, while the average level of depression in MI patients is 13.52, with a standard deviation of 9.755. and the lower and upper limits of the confidence interval for the difference are -6.012 and -0.468, respectively, while the p value is 0.023, which means that statistically was significant. Regarding the total levels of anxiety among DM patients, which are 12.76, and the total levels of anxiety among MI patients, which are 10.56, while the deviation is 9.163, the confidence of the interval of the difference lower is -0.404 and higher is 4.804 as the p value is 0.096. Additionally, the results of overall stress levels among DM patients are 18.20, and total stress levels among MI patients are 16.92, as shown in the table. Also, the deviation is 11.305, the lower confidence interval for the difference is -1.933, and the higher confidence interval is 4.493, with a p value of 0.425.

Table 3: Comparative between Mean of Diabetic and Myocardial Infarction

Total level of DASS	Mean	Std. Deviation	95% Confidence Interval of the Difference		t-value	P-value
			Lower	Upper		
Depression - DM	10.28	9.755	-6.012	-0.468	-2.348	0.023
Depression-MI	13.52					
Anxiety – DM	12.76	9.163	-0.404	4.804	1.698	0.096
Anxiety-MI	10.56					
Stress – DM	18.20	11.305	-1.933	4.493	0.801	0.427
Stress-MI	16.92					

DISCUSSION

In this study, psychological discomfort is compared between diabetic and myocardial infarction patients in Erbil City. The majority of the patients were between the ages of forty-five and fifty-six in the first part of the age group distribution. This result was in agreement with a case-control study about the high prevalence of depressive, anxious, and stress symptoms among diabetes mellitus patients, which revealed that the majority of patients fell within these age ranges [13].The majority of patients reported having good sleep quality, but two studies contradicted one study's findings among type 2 diabetes patients in the United States [16]. Another study looked at sleep disturbances in myocardial infarction patients, and both of these investigations revealed that the patients had poor or insufficient sleep [17]. In Table 2, depression, anxiety, and stress levels were listed for diabetic and myocardial infarction patients. The majority of diabetic patients had moderate levels of depression, which was inconsistent with a quantitative cross-sectional study about the relationship between depression, anxiety, and stress symptoms and glycemic control in diabetes mellitus patients, which found that most patients were suffering. A study revealed the high prevalence of depression among MI patients [8]. Supports the finding that the majority of patients with this condition had highly severe levels

of depression. According to the results of a quantitative cross-sectional study conducted in Iran about the prevalence of depression, anxiety, and stress disorders in elderly people living in Khoy, 74% of elderly people in the Khoy county had severe anxiety [18]. The majority of patients who were suffering from diabetes and myocardial infarction had extremely severe levels of anxiety, the study found. Regarding the level of stress in both diseases, it was determined that the patients had extremely high levels of stress. This finding was similar to that of the study about oxidative stress as the primary cause of acute myocardial infarction in diabetics, which established that stress is the primary factor in myocardial infarction (MI) in diabetics and has the worst prognosis [19]. The comparative levels of stress, anxiety, and depression between diabetic and myocardial infarctions were discussed in Table 3, which was the last one. It demonstrated that there were significant differences in patients' levels of depression, anxiety, and stress between these two diseases, such that the level of depression among DM patients is lower than the level of depression among MI patients. However, the conclusion was contradicted by two other studies [20], [21]. Which established that the level of depression in both diseases is lower than anxiety and stress. The overall levels of worry and stress among DM patients are higher than the overall levels among MI patients. Therefore, in order to effectively provide psychological therapy to MI and DM patients, it is necessary to take into account their psychological needs.

CONCLUSION

The majority of diabetic mellitus patients were had a moderate level of depression, while anxiety and stress were extremely severe, the majority of patients who had myocardial infarction had an extremely severe level of depression, anxiety and stress. About the comparative level of psychological distress among Diabetic Mellitus (DM) and Myocardial Infarction (MI) patients, the results showed a difference between them in that the DM level of depression was lower than that of MI, but the level of stress and anxiety in DM was higher than that of MI patients.

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