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Correlation Between Anxiety, Diabetes-Related Distress, and Depression with Blood Glucose Outcomes of DM Type 2 Patients at Bhayangkara Sukanto Hospital in 2024

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ABSTRACT

Diabetes mellitus is a chronic disease that can cause psychological distress such as anxiety, diabetes-related distress, and depression. This research is a retrospective non-experimental descriptive study that aims to analyze correlation between psychological distress and blood glucose outcome in type 2 Diabetes Mellitus patients at the internal medicine Bhayangkara Hospital in 2024. Of the 128 patients who met the criteria, the most patients were aged under 60 years (64.1%), the majority were female (61.7%), and the common drug use was oral medication (68%). The level of anxiety based on the GAD 7 scale was at a minimum level (47.7%). The highest level of difficulty for patients based on Diabetes Distress Screening Scale (DDS17) was at a high level of difficulty (50.8%). And the highest level of depression based on a PHQ 9 score was at the minimum level (43.8%). The results of the study, that there was a significant relationship between diabetes medication with blood glucose outcome in type 2 Diabetes Mellitus patients (P-Value <0.05). It can be concluded that there is no significant relationship between psychological distress and blood glucose outcome in type 2 Diabetes Mellitus patients at the internal medicine Bhayangkara Hospital in 2024.

KEYWORDS:
Anxiety, Diabetes-related Distress, Depression, Type 2 Diabetes Mellitus

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INTRODUCTION

The global prevalence of diabetes mellitus continues to triple even according to the *World Health Organization* (WHO) and *the* International Diabetes Federation (IDF) it is estimated that 578 million people (10.2% of adults aged 20- 79 years) will have diabetes by 2030 and will increase to 700 million (10.9%) by 2045 [1,2]. The Ministry of Health of the Republic Indonesia reported that the number of people with diabetes mellitus in 2021 was 19.47 million people [3,4]. It was recorded that during 2023 the number of diabetes mellitus patients who received routine treatment at the internal medicine polyclinic of the Bhayangkara Hospital was approximately 15 thousand patients. And patients with diabetes mellitus often experience psychological distress such as anxiety, diabetes-related distress, and depression.

Diabetes is a lifelong disease that requires lifestyle modifications and continuous treatment. This further adds to the burden of stress for diabetes patients because the demands of diabetes care, such as maintaining diet and physical health, exercise, routine blood glucose monitoring, and the fear of complications are

endless [5,6]. As a result, they experience feelings of depression, anxiety, and diabetes distress which increasingly affect their overall health and quality of life. During psychological stress, hormones such as catecholamines, neurotransmitters, glucocorticoids, growth hormone and glucagon will be activated, further increasing the patient's blood glucose. And because poor glycemic control and other functional disorders occur, diabetes complications will further increase which can further worsen depression, distress and anxiety in these patients [7,8].

A study done on 184 diabetic women in New Delhi showed that 19% of women were reported to have depression symptoms and 26.6% of women were reported to have anxiety symptoms. Lesser blood glucose monitoring and glycaemic control in adolescents are also associated with anxiety and depression symptoms [9]. Diabetes-related distress is defined as an emotional state experienced by people with diabetes who are worried about their disease management, the emotional burden from the condition, and/or potential difficulties accessing care or support. An Indian study showed a higher prevalence of moderate to high Diabetes-related distress in women (77.5%) than men [10]. Diabetes-related distress has been correlated to poor glycemic control and often undiagnosed or left untreated because of the low awareness from both the physician and the patient [11].

METHODS

It is a retrospective non-experimental descriptive study based on questionnaire and medical record data of type 2 Diabetes Mellitus patients at the internal medicine polyclinic Bhayangkara Hospital in 2024. The samples in this study were all patients with type 2 Diabetes Mellitus who came for treatment at the internal medicine polyclinic Bhayangkara Hospital in the period from february to april 2024 and met the inclusion criteria. The participants were screened for symptoms of depression with Patient Health Questionnaire-9 (PHQ-9), symptoms of anxiety with Generalized Anxiety Disorder-7 (GAD-7), and diabetes-related distress with Diabetes Distress Scale (DDS). The DDS first published in 2005, it has been used widely around the world as a clinical instrument for screening and non-diagnostic purpose. This copyrighted scale is available free for use in clinical care and research [12,13].

RESULT AND DISCUSSION

The Research data was taken from medical records and questionnaires from outpatients at the internal medicine polyclinic of Bhayangkara Hospital with a diagnosis of type 2 diabetes mellitus in the period february to april 2024 who met the criteria, totaling 128 samples.

Table 1. Univariate Analysis Based on Characteristics

Characteristic	Number (n)	Percentage (%)
Patient characteristics		
Age		
< 60 years old	82	64.1
>= 60 years old	46	35.9
Gender		
Man	49	38.3
Woman	79	61.7
Education		
Elementary	13	10.2
Junior	13	10.2
High	79	61.7
D3	6	4.7
S1	16	12.5
S2	1	0.8
DM Medicine		
Oral	87	68
Insulin	24	18.8
Oral+Insulin	12	13.2
Disease Characteristics		
DDS Degree of difficulty		
Light Difficulty Level	37	28.9
Medium Difficulty Level	26	20.3
High Difficulty Level	65	50.8
Depression Levels		
Minimal	56	43.8
Mild	30	23.4
Moderate	7	5.5
Moderate Severe	19	14.8
Severe	16	12.5
Anxiety Levels		
Minimal	61	47.7
Mild	21	16.4
Moderate	25	19.5
Severe	21	16.4

From the data table above, it was found that the highest number of patients with type 2 diabetes mellitus were under 60 years of age, namely 82 cases with a percentage of 64.1%. The majority being women, 79 people with a percentage of 61.7%. The education is high school totaling 79 cases with a percentage of 61.7%. And the highest use of diabetes mellitus medicine was 87 cases using oral medicine with a percentage of 68%. This is in accordance with research conducted by Huynh (2021), it was found that diabetes mellitus patients were 65% women and under 60 years [14]. From the research results, it was found that the highest level of patient difficulty based on diabetes distress score (DDS) in patients was at a high level of difficulty, namely 65 cases with a percentage of 50.8%. Similar results in the Adugnew Study (2023) where it was found that more than half of the participants experienced diabetes-related stress (53.9%) [15]. Also same results were found in the AlOtaibi (2021) study with a high prevalence of moderate to severe Diabetes Related Distress (35.6%) [10].

The level of depression based on the PHQ9 score in patients was highest at the minimum depression level, namely 56 cases with a percentage of 43.8%. And The level of anxiety based on the GAD7 score was mostly at the minimum anxiety level, namely 61 cases with a percentage of 47.7%. The results of the research above are in accordance with research conducted by Kaur (2013) which stated that there was an increase in the occurrence of anxiety (30.5%), diabetes distress (12.5%) and depression (11.5%) in type 2 diabetes mellitus patients in Malaysia [16]. The results also similar to research conducted by Kintzoglanakis (2022) where depressive symptoms were found at 16.6%, anxiety at 17.7% and diabetes related distress at 22.6%. And it is found most often in women [17].

Table 2. Characteristics of Patients with Blood Glucose level

Characteristics of Patients	Blood Glucose level				P - Value
	Normal		High		
	N	%	N	%	
Age					
< 60 years old	36	43.9	46	56.1	0.155
>= 60 years old	27	58.7	18	41.3	
Gender					
Man	25	51	24	49	0.889
Woman	38	48.1	41	51.9	
Education					
Elementary	6	46.2	7	53.8	0.798

Characteristics of Patients	Blood Glucose level Normal		High		P - Value
	N	%	N	%	
Junior	6	46.2	7	53.8	
High	42	53.2	37	46.8	
D3	2	33.3	4	66.7	
S1	7	43.8	9	56.3	
S2	0	0	1	100	
DM Medicine					
Oral	54	62.1	33	37.9	0.001
Insulin	5	20.8	19	79.2	
Oral+Insulin	63	49.1	65	50.8	

Table 3. Characteristics of Disease with Blood Glucose level

Characteristics of Disease	Blood Glucose level Normal		High		P - Value
	N	%	N	%	
DDS Degree of difficulty					
Light Difficulty Level	16	43.2	21	56.8	0.666
Medium Difficulty Level	14	53.8	12	46.2	
High Difficulty Level	33	50.8	32	49.2	
Depression Levels					
Minimal	24	42.9	32	57.1	0.263
Mild	17	56.7	13	43.3	
Moderate	5	71.4	2	28.6	
Moderate Severe	7	36.8	12	63.2	
Severe	10	62.5	6	37.5	
Anxiety Levels					
Minimal	31	50.8	30	49.2	0.426
Mild	12	57.1	9	42.9	
Moderate	13	52	12	48	
Severe	7	33.3	14	66.7	

From the results of the analysis above, it was found that there was a significant relationship between the diabetes mellitus medicine variable and the blood glucose levels of Type 2 diabetes mellitus patients, p-value 0,001 (p-value < 0,005), while there was no significant relationship between the other variables.

The results of this study contradict research conducted by Listrianti (2023), Lalramengmawiiand (2022), Nafiah (2021) which states that there is an influence of anxiety on the condition of diabetes mellitus sufferers, namely by the presence of uncontrolled blood sugar levels caused by the release of the hormone ACTH which is produced when anxiety occurs [18,19,20]. The results of the research above also contradict research conducted by Woon (2020) where there is a significant relationship between levels of depression and uncontrolled blood sugar levels [21].

This is in accordance with research conducted by Goncerz (2023), the results showed that there was no significant relationship between anxiety and depression on increasing blood sugar levels in DM patients [22]. Meanwhile, from the results of research conducted by Nanayakkara (2018), it was concluded that depression and diabetes distress also anxiety are more related to suboptimal self-care disorders such as eating disorders, sleep pattern disorders, and irregularity in taking medication. These things can indirectly increase blood glucose levels. So there is no direct correlation in increasing blood sugar levels in DM patients. According to researchers, there are also many other factors that cause increased blood sugar levels, including smoking habits, unhealthy lifestyles and not regularly controlling and taking medication [23].

CONCLUSION

After seeing the results of the discussion, several conclusions were obtained, namely the characteristics of type 2 diabetes mellitus patients who came for treatment to the internal medicine polyclinic Bhayangkara Hospital in the

period from february to april 2024 were found to be mostly under the age of 60 years old, female, and most patients used oral medications.

The patient's level of difficulty based on the DDS is at a high level of difficulty. Depression level based on the PHQ9 score at the minimum depression level and Anxiety level based on the GAD7 score at the minimum anxiety level. There was no significant relationship between psychological distress and blood glucose outcome in type 2 Diabetes Mellitus patients at the internal medicine polyclinic of Bhayangkara Hospital in 2024.

This research has several limitations, including the lack of research samples and the limited time for distributing the questionnaire, namely only 3 months. This research uses a survey method via questionnaires, researchers do not conduct interviews directly so that the data obtained is only based on data collected through written instruments. The weakness of the survey approach via questionnaires generally lies in internal validity.

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