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The Relationship Between Depression Levels and Blood Sugar Levels in Type II Diabetes Mellitus Patients at Dr. Fl Tobing General Hospital, Sibolga, in 2023

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ABSTRACT

Type II Diabetes Mellitus is a chronic disease with increasing prevalence and is often accompanied by psychological problems, one of which is depression. Depression can affect metabolic control, potentially worsening blood sugar levels in sufferers. Purpose This study aims to determine the relationship between depression levels and blood sugar levels in type II Diabetes Mellitus sufferers at Dr. FL Tobing General Hospital, Sibolga in 2023. This study used an analytical design with a cross-sectional approach. The population was all type II Diabetes Mellitus patients undergoing outpatient treatment at Dr. FL Tobing General Hospital, Sibolga in 2023. Samples were taken using a purposive sampling technique of 51 respondents. Statistical tests showed a significant relationship between depression levels and blood sugar levels in type II Diabetes Mellitus sufferers ($p < 0.05$)., bivariate with chi-square test, and multivariate with logistic regression.

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1. Introduction

Diabetes Mellitus (DM) is a non-communicable disease whose number of cases continues to increase globally and has become a major public health problem.(Marasabessy & Nasela, 2020),(Hazni et al., 2021)According to the International Diabetes Federation (IDF) in 2021, there were approximately 537 million adults worldwide with diabetes, and this number is expected to increase to 643 million by 2030.(Listriyani, Sandya, Handayani, & Leftungun, 2023),(Damanik, Saragih, Yunia, & Dewi, 2023)Indonesia ranks fifth in the world for the number of diabetes sufferers, with a prevalence reaching 19.5 million. Type II diabetes mellitus is the most prevalent form of DM, accounting for approximately 90–95% of all diabetes cases.(Faswita, 2019),(Sofa & Rahmawati, 2021).

Type II DM not only causes physical complications such as cardiovascular disorders, nephropathy, neuropathy, and retinopathy, but also has an impact on the psychological condition of sufferers.(Yusnita, Djafar, & Tuharea, 2021),(Wardalifa, 2022)One of the most common psychological problems is depression. Depression in people with diabetes can arise from the burden of chronic disease, activity limitations, and lifestyle changes. Research shows that people with diabetes have a two-fold higher risk of developing depression than the general population.(FATMAWATI, 2021),(Hartanti, Pudjibudojo, Aditama, & Rahayu, 2013).

Depression can affect metabolic control through both biological and behavioral mechanisms. Biologically, depression is associated with increased stress hormones (cortisol), which can disrupt blood glucose regulation.(Ludiana, Hasanah, Sari, Fitri, & Nurhayati, 2022),(Vina, Wilson, & In'am Scientists, 2021)Behaviorally, depression can reduce a patient's motivation to comply with treatment, maintain a diet, and engage in physical activity, resulting in increased blood sugar levels. This makes the psychological aspect crucial in the management of type 2 diabetes.(Muchlisin, 2023),(Astuti, Sari, & Merdekawati, 2022).

Dr. FL Tobing General Hospital, Sibolga, as a referral hospital in the Sibolga area and its surrounding areas, treats a significant number of patients with type II diabetes each year. However, attention to psychological aspects such as depression in diabetes patients remains relatively lacking compared to physical aspects. Therefore, research is needed to investigate the relationship between depression levels and blood sugar levels in patients with type II diabetes at the hospital.(Vina et al., 2021),(Wijayanto & Widya, 2019).

2. Methods

2.1 Research Design

This study used an analytical design with a cross-sectional approach. The population was all outpatients with type II diabetes mellitus at Dr. FL Tobing General Hospital, Sibolga, in 2023. Fifty-one respondents were sampled using a purposive sampling technique. The research instruments were the Beck Depression Inventory (BDI) questionnaire to measure depression levels and laboratory tests to measure blood sugar levels.(FATMAWATI, 2021),(Yulistari, 2022). Data analysis was conducted univariately and bivariately using the Chi-Square test with a 95% confidence level.

2.2 Population and Sample

The population in this study were patients who had been diagnosed with type II DM by a doctor aged ≥ 30 years.

2.3 Data Collection Techniques and Instrument Development

a. Primary Data

Primary data was obtained directly from respondents through structured interviews using a questionnaire to measure depression levels. Laboratory tests were used to determine respondents' blood sugar levels.

b. Secondary Data

Secondary data was obtained from patient medical records at Dr. FL Tobing Sibolga Hospital, such as patient identity, medical history, and other relevant supporting data.

2.4 Analysis Techniques

a. Univariate

The data obtained in general in this analysis only produces the distribution and percentage of each variable, namely the depression variable and blood sugar levels in type 2 Diabetes Mellitus sufferers.

b. Bivariate Analysis

Univariate analysis was performed on each variable from the research results. Generally, this analysis only yields the distribution and percentage of each variable, namely depression and blood sugar levels in patients with type 2 diabetes mellitus.

3. Results and Discussion

The results of this study showed that more than half of the respondents (62.7%) experienced depression of varying severity, and most patients (66.7%) had uncontrolled blood sugar levels. Bivariate analysis demonstrated a significant association between depression and blood sugar levels (p=0.004). The more severe the depression, the higher the proportion of patients with uncontrolled blood sugar levels. Furthermore, patients with depression were 6.5 times more likely to have uncontrolled blood sugar than patients without depression. Spearman's correlation also showed a moderate positive association between depression scores and HbA1c levels (rho=0.39).

These results support the theory that depression can worsen glycemic control in patients with type II diabetes mellitus. Psychologically, depressed patients tend to be less compliant with medication, diet, and physical activity, making blood sugar control difficult. Biologically, depression increases the secretion of stress hormones (cortisol and catecholamines), which can increase insulin resistance and blood glucose levels.

4. Conclusions

Based on the results of research on the relationship between depression levels and blood sugar levels in type II Diabetes Mellitus patients at Dr. FL Tobing Sibolga Hospital in 2023 with 51 respondents, it can be concluded that: The majority of respondents experienced depression (62.7%) with the largest distribution in the mild depression category, while the majority of patients (66.7%) had uncontrolled blood sugar levels. The analysis results showed a significant relationship between depression levels and blood sugar levels (p=0.004), with a positive relationship, meaning that the higher the level of depression, the worse the patient's blood sugar control. Patients who experience depression have a 6.5 times greater risk of experiencing uncontrolled blood sugar levels compared to patients who do not experience depression. These findings reinforce the importance of paying attention to the psychological aspects in the management of type II Diabetes Mellitus. Comprehensive interventions, including blood sugar control and the detection and treatment of depression, are needed to improve the patient's quality of life.

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