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The relationship of medication adherence and lifestyle on the quality of life of type 2 diabetes mellitus patients at Harapan Bunda Hospital Batam

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ABSTRACT

Diabetes mellitus is a leading endocrine disorder throughout the world. Diabetes mellitus requires appropriate management so that the quality of life of DM patients is well maintained so that patients can maintain a sense of comfort and health. Successful treatment can improve the patient's quality of life and prevent complications. The aim of this study was to assess the relationship between adherence to medication use and lifestyle in diabetes mellitus patients, using descriptive analytical research methods with a cross sectional design conducted at the outpatient installation of Harapan Bunda Hospital, Batam with a sample of 350 patients who were matched to predetermined criteria. Bivariate analysis used chi square and it was found that compliance with medication use and the quality of life of type 2 DM patients was $p = 0.059 > \alpha=0.05$, while the relationship between lifestyle and quality of life of type 2 DM patients was $p = 0.000 < \alpha=0.05$. The conclusion of the study is that there is no relationship between adherence to medication use, while lifestyle is related to the quality of life of type 2 DM patients.

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INTRODUCTION

Diabetes mellitus is a leading endocrine disorder throughout the world. (Yazew et al., 2019). The global prevalence of Diabetes Mellitus (DM) continues to increase up to 3 times by 2030. (Soelistijo, 2021). According to the International Diabetes Federation (IDF) 537 million adults aged 20-79 years live with diabetes. This figure is predicted to increase to 643 million in 2030 and to 783 million in 2025. Diabetes is responsible for the deaths of 6.7 million people in 2021 (Kementerian Kesehatan RI., 2020).

In Indonesia, Diabetes mellitus is ranked fourth as a chronic disease based on its prevalence (Arfania 2021). The 2018 Riskerda results show that the prevalence of diabetes mellitus based on doctor's diagnosis at age ≥ 15 years is 2%. This figure has increased compared to 2013 data, namely 1.5%. Almost all provinces showed an increase in prevalence from 2013 – 2018, except

for East Nusa Tenggara province. Riau Islands based on 2018 Riskerda data shows a prevalence of 1.68% and Batam City ranks 5th with a prevalence value of 1.48% (Kementerian Kesehatan RI., 2020; Sahin, 2021).

The increase in the prevalence of DM occurs due to the increase in the elderly population and changes in lifestyle, ranging from diet, types of food consumed to reduced physical activity. This occurs in adult age groups of all socio-economic statuses. (Hayati Ifroh et al., 2022). People's lifestyles that lack exercise and tend to consume foods high in carbohydrates will have an impact on uncontrolled blood sugar which can trigger other diseases and potentially create a dangerous circle in the lives of DM patients (Lainsamputty et al., 2022).

Lifestyle as a risk factor for diabetes mellitus describes daily behavior patterns that lead to efforts to maintain positive physical, mental and social conditions. Lifestyle includes sleeping habits, eating, weight control, smoking and drinking habits, exercise and the ability to manage stress. (Purwanto et al., 2022) Unbalanced consumption of food and drinks (high in calories, low in fiber, or fast food), rarely exercising, obesity, stress, and irregular rest are examples of lifestyle and eating patterns that can trigger diabetes mellitus in a person. This change in unhealthy living behavior is the most common cause and is very important in causing this disease. (Indrayanti et al., 2017; Puspitasari et al., 2022; Rasdianah, 2016)

Pasien DM tipe 2 di Rumah Sakit Harapan Bunda (RSHB) Batam city continues to experience an increase every month. Based on 2022 medical record data at RSHB, it shows that type 2 DM is among the 10 most common diseases treated in outpatient clinics. In December 2022, 421 new patients diagnosed with type 2 DM were reported. Based on this, researchers feel it is necessary to conduct research on the relationship between adherence to drug use and lifestyle on the quality of life of type 2 DM patients in the outpatient clinic at Harapan Bunda Hospital, Batam.

RESEARCH METHOD

This research is a descriptive analytical study with a cross sectional design carried out in the Hospital Outpatient Installation. Batam Mother's Hope. The research period starts from April 2023 to May 2023. Sample selection was carried out using purposive sampling with a sample size of 350 outpatients. Data was obtained from filling in demographic data and the HPLP II questionnaire for lifestyle, MARS for compliance with antidiabetic drug use and WHOQOL-BREF for quality of life. Meanwhile, data analysis used in this study was the chi squere test.

RESULTS AND DISCUSSIONS

Results

This research was carried out from May to July 2023 at the hospital. Batam Mother's Hope. This data is primary data collected by filling out questionnaires from 350 respondents who met the inclusion and exclusion criteria

a. Respondent Characteristics
   Sociodemographic and clinical characteristics of Type 2 DM patients consist of gender, age, education, occupation, length of time suffering from DM, IBM, chronic diseases suffered, number of chronic medications, insulin use, fasting blood sugar, 2 hour pp blood sugar and HbA1c. In detail the characteristics of the respondents can be seen below:

Table 1. Respondent Characteristics

Sociodemographic Characteristics	Frecuency	
	(n = 350)	(%)
Gender		
man	144	41,1%
Woman	206	58,9%

Sociodemographic Characteristics	Frecuency	
	(n = 350)	(%)
Age		
19 - 44 years	50	14,3%
45 - 59 years	180	51,4%
> 60 years	120	34,3%
Education		
Elementry School	83	23,7%
Junior High School	59	16,9%
Senior High School	147	42%
Bachelor	61	17,4%
Work		
W. housewife	185	52,9%
laborer	10	2,9%
Employee	91	26%
Bussnismen	44	12,6%
retired	20	5,7%
Suffering from DM for a long time		
< 5 years	253	72,3%
5 – 10 years	60	17,1%
> 10 years	37	10,6%
IBM		
Underweight	22	6,3%
Normal	134	38,3%
Overweight	78	22,3%
Obesitay	116	33,1%
Suffering from other chronic diseases		
Have	152	43,4%
Haven't	198	56,6%
Number of Chronic Medications		
≤ 5	271	77,4%
> 5	79	22,6%
Insulin Use		
Have	126	36%
Haven't	224	64%
Laboratory Data		
Fasting Blood Sugar		
< 126 mg/ml	96	27,4%
> 126 mg/ml	254	72,6%
Blood Sugar 2 hours		
< 180 mg/ml	77	22%
> 180 mg/ml	273	78%
HbA1c	30	8,6%
< 6.5%	320	91,4%
> 6.5%		

There were more female respondents than male respondents, where the number of female respondents was 206 people (58.9%) while there were 144 male respondents (41.1%). The majority of respondents were pre-elderly, namely 180 people (51.4%), while 120 were elderly (34.3%) and 50 were adults (14.3%). In terms of education, the majority of respondents in this study had a high school education background, namely 147 people (42%), followed by elementary school graduates with 83 people (23.7%) and 59 people with a junior high school background (16.9%) and 61 people with a bachelor's degree (17.4%).

The majority of respondents' jobs were as housewives, 185 people (52.9%), and the least as laborers, 10 people (2.9%). Most of the respondents in this study had suffered from type 2 DM < 5 years, namely 253 people (72.3%), while the respondents who had suffered from type 2 DM for 5-

10 years were 60 people (17.1%) and 37 people had suffered from type 2 DM for 5-10 years. people (10.6%).

Meanwhile, the highest BMI was in the normal category, namely 134 people (38.3%), followed by obesity with 116 people (33.1%), overweight with 78 people (22.3%) and underweight with 22 people (6.3%). Respondents who suffered from other chronic diseases in this study were 152 people (43.4%) while those who did not suffer from other chronic diseases were 198 people (56.6%). Most of the respondents in this study received less than 5 types of chronic medication, namely 271 people (77.4%), while those who received > 5 chronic medications were 79 people (22.6%). The majority did not use insulin, namely 224 people (64%), while 126 people (36%) used insulin. 273 people (78%) had 2-hour PP blood sugar levels above normal values (>180 mg/ml), while 77 people (22%) had blood sugar levels below normal values. HbA1c values > 6.5% were 320 people (91.4%) while HbA1C values < 6.5% were 30 people (8.6%).

b. Relationship between Adherence to Medication Use and Quality of Life in Type 2 DM Patients

Table 2. Relationship between Adherence to Medication Use and Quality of Life in Type 2 DM Patients

Medication Compliance	Quality of Life				Total		p value
	Not good		Good				
	frecuency	(%)	frecuency	(%)	frecuency	(%)	
Lack of Compliance	96	51,9	89	48,1	185	100	0,059
Obedient	69	41,8	96	58,2	165	100	
Total	165	47,1	185	52,8	350	100	

The table shows that patients who were less adherent had a poor quality of life (51.9%) more than those who had a good quality of life (48.1%). Meanwhile, patients who adhere to medication use have poor quality of life (41.8%) and good quality of life (58.2%).

The results of statistical tests obtained a value of $p = 0.059 > \alpha = 0.05$, which means that there is no relationship between adherence to medication use and the quality of life of type 2 DM patients.

c. Relationship of Lifestyle to Quality of Life in Type 2 DM Patients

Table 3. Relationship of Lifestyle to Quality of Life in Type 2 DM Patients

Life Style	Quality of Life				Total		p value
	Not good		good				
	Frecuency	(%)	Frecuency	(%)	frecuancy	(%)	
Not Good	131	83,4	26	16,6	157	100	0,000
Good	34	17,6	159	82,4	193	100	
Total	165	47,1	185	52,8	350	100	

The table shows that the majority of patients whose lifestyle is poor have a poor quality of life (83.4%) compared to those who have a good quality of life (16.6%). Meanwhile, patients who have a good lifestyle have a poor quality of life (17.6%) and a good quality of life (82.4%).

The statistical test results showed that the value was $p = 0.000 < \alpha = 0.05$, which means that there is a relationship between lifestyle and the quality of life of type 2 DM patients.

Discussion

Medication compliance is the patient's compliance with recommendations for prescribed medication related to time, dose and frequency. The level of compliance is one of the things that plays an important role in the treatment of chronic diseases. The causes of low compliance that

often arise are mostly patients forgetting, not complying with treatment according to the doctor's instructions, and misreading the label (Julaiha, 2019; William T. Cefalu, 2010)

Patient medication compliance influences the success of therapy. Therapeutic results will not be optimal without the patient's awareness of being obedient to taking medication. Non-compliance in taking medication can be an obstacle in controlling the patient's blood sugar levels. This shows that there is a need for intervention to increase patient compliance in using medication. Outpatients tend to be disobedient to treatment because their clinical conditions are better than inpatients, so they tend to forget and ignore the obligation to take medication (Arfania, 2021).

The level of compliance is an assessment carried out on patients to find out whether the patient has followed the rules for using drugs in undergoing therapy. Patient non-compliance can be caused by several things, such as busy activities, forgetting to take medication or burdensome costs for patients.(Mulyaningsih et al., 2023; Pranata et al., 2022)

Researchers assume that the patient's low compliance in using the DM drugs above is due to changing the dose and taking the drug in a smaller dose. Low treatment compliance will have a negative impact on increasing various types of complications.(Iswiningtyas et al., 2019)

The dominant lifestyle that triggers type 2 DM is diet and physical activity. The high number of type 2 DM sufferers is partly due to changes in lifestyle in society as well as awareness of early detection of DM, lack of physical activity and incorrect eating patterns. Lack of knowledge about lifestyle means that people only realize they have DM after experiencing serious illness..(Anggraini & Rahayu, 2017; Hayati Ifroh et al., 2022)

Lack of physical activity makes the body's secretion system run slowly. As a result, there is a buildup of fat in the body, which leads to excess weight over time and leads to diabetes mellitus. Low physical activity has a risk of diabetes three times greater than high physical activity. People whose daily physical activity is heavy have a lower risk of suffering from diabetes mellitus compared to people whose daily physical activity is low.(Alfian, 2015; Laoh & Tampongangoy, 2015; Soelistijo, 2021)

Quality of life is a person's view of his position in life related to his life goals, hopes, standards and focus. The poor quality of life in DM patients is due to diabetes's perception of the disease they suffer from not improving in terms of recovery, diabetes having negative feelings such as hopelessness, anger, shame and feeling that they no longer care about improving their health so that it will affect the quality of life that diabetes has. (Ariyana & Dian Afriyani, 2022; Putra, 2018)

The quality of life of diabetes mellitus sufferers predominantly has a good quality of life and some have an adequate quality of life, while only a small percentage of sufferers have a poor quality of life. A high quality of life affects the length of an individual's life span and in fact sufferers need to continue living with a good quality of life. (Rahmayanti & Karlina, 2017)

Quality of life is a description of an individual's ability to carry out his life activities. The quality of life of type 2 DM patients can be influenced by medication adherence factors.(Decroli, 2019) However, in this study, no significant relationship was found between compliance and quality of life, where statistically a p value of 0.059 was obtained. This could be because adherence to taking medication is only one factor that influences the success of therapy and improving the quality of life of type 2 DM patients. Other factors that can also influence include food intake, physical activity and obesity (Rahmayanti & Karlina, 2017).

Diabetes mellitus is a lifestyle disease, so to prevent this disease from becoming more progressive, lifestyle adjustments must be made. Lifestyle changes are an important key in

achieving good glycemic control, optimal quality of life and reducing expensive medical costs and reducing the incidence of complications(Carediabetes, 2010; Ritonga et al., 2021).

Maintaining a good lifestyle is not as easy as imagined. This happens because of many things, such as a lack of implementation of health education and a lack of intensive support from health workers. Further research still needs to be carried out to obtain the most appropriate method for establishing a new lifestyle in chronic disease sufferers, especially type 2 DM sufferers, so that progression can be well controlled.(Fandinata & Darmawan, 2020; Purwanto et al., 2022)

.CONCLUSION

Sociodemographic characteristics and clinical characteristics of type 2 DM patients in hospital outpatient clinics. Mother Batam's hope is dominated by women, aged 45-59 years (pre-elderly), high school education level, most of whom are housewives. Apart from that, most respondents' BMI was in the normal category and most did not suffer from other chronic diseases and most received <5 types of chronic medication and more did not use insulin. Laboratory data shows that the majority of respondents had uncontrolled fasting blood sugar (GDP) and 2-hour PP blood sugar levels and high HbA1c values (> 5.6%). More patients had a good lifestyle (55.1%) compared to patients who had a less good lifestyle (44.9%). Whereas The quality of life of type 2 DM patients is in good condition (53.5%) more than patients who have less good quality of life (46.5%)

Compliance with medication use has no relationship with the quality of life of type 2 DM patients, while the lifestyle and quality of life of type 2 DM patients in the hospital outpatient clinic. Mother of Batam's hope there is a relationship (p = 0.000). Recommendations that can be made are providing counseling and drug information services with appropriate methods to improve compliance, lifestyle and quality of life for type 2 DM patients.

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