

## ANALYSIS OF BLOOD GLUCOSE LEVELS IN PEOPLE WITH TYPE II DIABETES MELLITUS (DM) AGED 50-60 YEARS WITH GLUCOMETER METHOD AT ISLAMIC MALAHAYATI MEDAN HOSPITAL YEAR 2022

Maniur Arianto Siahaan<sup>1</sup>, Dyna Grace Aruan<sup>2</sup>

Faculty of Vocational Education, Sari Mutiara University Indonesia

Email : [abby2510.acs@gmail.com](mailto:abby2510.acs@gmail.com), [dynaaruan1245@gmail.com](mailto:dynaaruan1245@gmail.com)

### ABSTRACT

*Diabetes Mellitus (DM) type II is a metabolic disorder disease characterized by an increase in blood glucose due to a decrease in insulin secretion by pancreatic beta cells or impaired insulin function (insulin resistance). Blood glucose is a carbohydrate that circulates in the body in the metabolic process. Monitoring blood sugar levels is needed in establishing a diagnosis, especially for Diabetes Mellitus (DM). Blood glucose levels can be checked when the patient is in a fasting condition or it can also be when the patient comes to check, with the results of the examination of blood glucose levels when >200 mg / dl, while for the results of glucose levels during fasting >126 mg / dl.. This type of research is descriptive. A tool to measure blood glucose levels using the Glucometer Method. The time of the study was carried out from January to March at the Islamic Malahayati Medan Hospital's Laboratory by taking 10 samples. Data collection is carried out by direct examination of blood glucose levels in patients with Diabetes Mellitus at Malahayati Medan Islamic Hospital in March-April 2022. From the results of examination of blood glucose levels in 10 samples of type II diabetes mellitus (DM) aged 50-60 years with glucometer method at Malahayati Islam hospital Medan 2022 obtained the results that all samples showed an average blood glucose level value above 220 mg / dl and increased from its normal value.*

**Keywords:** *Diabetes Mellitus; Blood Glucose Level*

### INTRODUCTION

Diabetes Mellitus (DM) is a group of metabolic diseases characterized by hyperglycemia due to impaired insulin secretion, insulin action, or both. DM can be classified into several types, namely, type 1 DM, type 2 DM, gestational DM and other types of DM. There are several types of DM, type 2 DM is the type most commonly found in 90-95%.<sup>1</sup>

In Indonesia, Diabetes Mellitus occupies the seventh position with the highest number of patients in the world, reaching 10.3 million, over the last 3 decades and

growing fastest in low- and middle-income countries (WHO, 2016).<sup>2</sup>

From basic health research data (Riskesdas) in 2018, the incidence of non-communicable diseases, namely diabetes mellitus in Indonesia based on a doctor's diagnosis in a population 15 years by province has increased to 2.0% from the results of the 2013 Riskesdas data, which is 1.5%. Riskesdas 2019 data was also obtained in North Sumatra Province.<sup>3</sup>

Hyperglycemia is a condition where the blood glucose level is very high from the normal range of blood sugar levels (Elisabeth, 2009).

According to McNaughton (2011), hypoglycemia is a condition in which blood sugar levels are lower than normal limits.<sup>4</sup>

The relationship between blood glucose levels and the quality of life of people with diabetes mellitus is influenced by various factors, both medically and psychologically. These factors include understanding of diabetes, adjustment to diabetes, depression, self-regulation, negative emotions, self-efficacy, social support, complications, personality characteristics and coping behaviors.<sup>5</sup>

One method to check Blood Glucose Levels in Type 2 Diabetes Mellitus (DM) patients aged 50-60 years is to use a tool called a glucometer. The principle of examination on a glucometer is that the enzyme glucose dehydrogenase on the test strip converts glucose in a blood sample to gluconolactone, this reaction creates an electric current that is detected by the glucometer. The advantage of using a glucometer is that it is easy to carry out and the results immediately come out on the monitor so that it can be done by anyone, anytime, and anywhere. While the drawback is this examination can only measure the state of blood sugar at a certain time.<sup>6</sup>

In a preliminary survey that researchers conducted at the Malahayati Islamic Hospital in Medan in December 2021, the number of patients diagnosed with

type II Diabetes Mellitus (DM) from November-December was 60 peoples.

## **RESEARCH METHODS**

This type of research is a descriptive cross sectional method which aims to determine blood glucose levels in type II diabetes mellitus patients aged 50-60 years at Islamic Malahayati Medan Hospital.

## **RESEARCH PLACE**

The study was conducted in the laboratory of Islamic Malahayati Medan Hospital from March to April 2022.

## **RESEARCH TIME**

The study was conducted in March - April 2022.

## **POPULATION AND SAMPLE**

The population of this study is blood glucose levels taken from all patients suffering from type II Diabetes Mellitus aged 50-60 years at Islamic Malahayati Medan Hospital on March 2022 and the samples examined in this study were 10 patients with diabetes mellitus in March 2022.

## **RESULTS AND DISCUSSION**

Research that has been carried out at the RSI Laboratory. Malahayati Medan in March-April 2021 obtained 10 samples of blood glucose levels in type 2 Diabetes Mellitus (DM) patients aged 50-60 years using the Glucometer method obtained the following results:

**Table 4.1 Results of examination of blood glucose levels in people with diabetes mellitus (DM)**

No	Sample Code	Age (Years)	Gender	Results (mg/dl)	Description
1	S1	52 years old	Man	220	Increase
2	S2	58 years old	Woman	240	Increase
3	S3	51 years old	Woman	239	Increase
4	S4	55 years old	Woman	312	Increase
5	S5	60 Years	Man	280	Increase
6	S6	59 years old	Woman	394	Increase
7	S7	55 years old	Woman	264	Increase
8	S8	56 years old	Man	233	Increase
9	S9	58 years old	Man	258	Increase
10	S10	51 years old	Woman	271	Increase

It can be seen from Table 4.1 above that from the examination of 10 samples of patients with Type 2 Diabetes Mellitus aged 50-60 years who were treated at the Malahayati Islamic Hospital, their blood glucose levels increased from normal values

The examination of blood glucose levels in patients with type 2 Diabetes Mellitus is carried out quantitatively by using a glucometer examination method, using a glucometer stick tool. Glucose is a sugar in the blood that is formed from carbohydrates in food and stored as glycogen in the liver and skeletal muscles. Whereas blood glucose level is the level of sugar in the blood, blood sugar concentration or serum glucose level, which is tightly regulated in the body.

Based on the table of examination results of 10 samples of patients diagnosed with Diabetes Mellitus with the age of 50-60 years, it can be seen that all patients have blood glucose levels that are higher than their normal values. Of the 10 samples, 6 of them were women and 4 men all had blood glucose levels

above normal (<200 mg/dl). Increased blood glucose levels in people with type 2 diabetes mellitus, due to increased blood glucose levels as a result of the body's inability to process carbohydrates or glucose due to a lack of insulin or insulin does not function perfectly (insulin resistance occurs in the body).

Instability of blood glucose levels is a variation in which blood glucose levels increase or decrease from the normal range, namely experiencing hyperglycemia or hypoglycemia. Hyperglycemia is a condition in which blood glucose levels are elevated or excessive. This condition is caused by stress, infection, and consumption of certain drugs. Hypoglycemia is a condition in which blood glucose levels are below normal, occurring due to an imbalance between the food eaten, physical activity and the drugs used.

Hyperglycemia is a condition in which blood sugar spikes up and is higher than the normal value (> 200 mg/dl), some of the symptoms of hyperglycemia are: frequent

urination, lethargy, difficulty focusing, stomach pain, nausea, and vomiting (Nabyl, 2009). Hypoglycemia is a condition in

### CONCLUSION

From the results of the examination of blood glucose levels in 10 samples of type 2 diabetes mellitus (DM) patients aged 50-60 years using the glucometer method at the Malahayati Islamic Hospital in Medan, the results showed that all samples showed an average blood glucose level value above 220 mg/dl and increased from its normal value. The main use of

which blood sugar drops drastically and lower than normal values (< 70 mg/dl), this condition is exacerbated by the use of insulin or drugs.<sup>8</sup>

a glucometer is for monitoring and not for definite diagnosis because there are some limitations of the glucometer, which is that it can only use capillary blood samples.

### BIBLIOGRAPHY

- Amir, MS (2015). Blood Glucose Levels in Patients with Type 2 Diabetes Mellitus at the Bahu Health Center, Manado City. *Journal of e-Biomedicine (eBm)*. 3 (1).
- Soegondo et., a. (2015). *Integrated Diabetes Mellitus Management 2015*. FKUI Publishing Center: Jakarta.
- Association)., A. (. (2014). *Diagnosis and Classification of Diabetes Mellitus*. *Diabetes Care*.
- Fatimah, RN (2015). *Diabetes Mellitus Type 2*. *J Majority* vol 4 no 5 .
- Kee, Joyce LeFever, 2007. *Laboratory & Diagnostic Examination Guidelines*. Edition 6, Jakarta : EGC
- McNaughton, CD (2011). *Diabetes in the Emergency Department. Acute Care of Diabetes Patient: Clinical Diabetes*.
- Buku Panduan kerja, di Rumah Sakit Islam Malahayati Medan Tahun 2021, Tentang pemeriksaan glukosa darah dengan alat kimia klinik.
- Guyton, EI (2016). *Guyton and Hall: Textbook of Medical Physiology Revised Edition*. EGC: Jakarta.
- Nabyl. (2009). *Mengenal Diabetes*. Gramedia Pustaka Utama: Jakarta.
- PERKENI. (2011). *Konsensus Pengelolaan dan Pencegahan Diabetes Melitus Tipe 2 di Indonesia*. PERKENI; 2011: Jakarta.
- Herikson J. E., & Bech-Nielsen H., (2009). *Blood Glucose Levels*
- Price, S. d. (2006). *Patofisiologi, Konsep Klinis ProsesProses Penyakit*, Edisi 6. Huriawati H, Natalia S, Pita Wulansari, Dewi Asih (eds), Penerbit Buku Kedokteran, EGC: Jakarta.

***Maniur Arianto Siahaan et.all|Analysis Of Blood Glucose Levels In People With Type II Diabetes Mellitus (DM) Aged 50-60 Years With Glucometer Method At Islamic Malahayati Medan Hospital Year 2022***

Sibarani, D. (2010). Description of blood glucose levels in the elderly fasting and 2 hours after eating at the Dharma Asih Binjai nursing home, North Sumatra. University of North Sumatra: Medan.

Putu Ayu Parwati, dkk. Perbedaan Hasil Pemeriksaan Kimia Urin Dengan Variasi Jenis Pengawet Urin, Jurnal Analis Laboratorium Medik, e-journal.sarimutiara.ac.id, Vol. 5 (no.2) Desember 2020, hal 23-27.