

Overview Of Blood Glucose Levels In Diabetes Mellitus Patients At UPT Medan Health Laboratory In 2022

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ABSTRACT

This study aims to determine the distribution of blood glucose levels in patients with diabetes mellitus. This type of research design is descriptive analytic. The population is obtain from outpatient medical record data for diabetes mellitus patients for the last 3 months from January to March 2022 with a total of 63 people. The sample of this study amount to 63 people. Data collection is obtained through medical record data and the results of examination of blood glucose levels. The results of this study find that respondents with high fasting blood glucose levels are 54 people (85.9%), the age range that suffer the most from diabetes mellitus was the age range of 65-74 years. The increase in blood glucose is due to genetic factors, immunological factors, immunological factors, environment, age, and obesity.

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1. INTRODUCTION

Diabetes mellitus is one of the most common diseases. Diabetes mellitus is a disease of metabolic disorders, especially carbohydrate metabolism caused by reduced or absent insulin hormone from pancreatic beta cells or due to impaired insulin function. Diabetes Mellitus is a type of hyperglycemic disease. Hyperglycemia is a condition of blood glucose levels above normal values. Therefore it is necessary to check blood glucose [1].

There are 2 types of diabetes mellitus, namely diabetes mellitus type I or known as insulin dependent diabetes mellitus (IDDM) and diabetes mellitus type II or known as noninsulin dependent diabetes mellitus (NIDDM). Complications of DM arise because glucose levels are not controlled and not handled properly, causing macrovascular and microvascular complications. Microvascular complications include damage to the nervous system (neuropathy), damage to the kidney system (nephropathy) and damage to the eye (retinopathy). Meanwhile, macrovascular complications include heart disease, stroke, and peripheral vascular disease [2].

According to data from the World Health Organization (WHO) in 2012, diabetes is the 8th leading cause of death in the world. In 2015 there were 415 million adults with diabetes, a 4-fold increase from 108 million in 1980, by 2040 the number is expected to be 642 million in the world. Based on data from the International Diabetes Federation (IDF), the global prevalence of DM in 2019 was estimated at 9.3% (463 million people), increasing to 10.2% (578 million) in 2019.

In 2030 and 10.9% (700 million) in. In 2015, Indonesia was ranked 7th as the country with the most DM sufferers in the world, and it is estimated that it will increase to 6th in 2040. The results of basic health research specifically for North Sumatra Province in 2013 showed that the prevalence of diagnosed DM at the age of 15 in Medan city was equal to 2.7%, the highest DM prevalence by gender was female at 1.9% and the prevalence in males was 1.6% [3]. The results of the initial survey conducted by the authors found that diabetes mellitus patients according to the Medan Health Laboratory UPT from January to March 2022 were quite high.

The high number of people with diabetes mellitus in Medan encourages researchers to conduct research with the aim of knowing the description of blood glucose levels in patients with diabetes mellitus at UPT Medan Health Laboratory. Researchers hope that this research can be used as information material for clinical institutions and can be useful as evaluation material for clinical installations.

2. METHOD

The type of research design used in this study is a descriptive analytic study with a population of 63 people with diabetes mellitus at the UPT Laboratory of Health in Medan who examined blood glucose levels in DM patients in 2022. The population was taken from inpatient medical record data for the last 3 months at the beginning of January to March 2022. The sampling technique used in this study was total sampling where all members of the population were used as samples. The research instrument used is the GOD-PAP (Glucose Oxidase) method, which is a method of examining glucose levels in patients with diabetes mellitus using a spectrophotometer. This research is located at UPT Medan Health Laboratory with a research time span from February to May 2022. There are 2 sources of data in this study, namely primary data and secondary data. Primary data in this study were obtained from the results of examination of blood glucose levels in patients with diabetes mellitus at UPT Medical Laboratory Medan. While the secondary data in this study were obtained from the results of the UPT Medical Record, literature review from literature books, journals and related documents. The characteristics of the data collection method used in this study are quantitative, the data collected in quantitative research must be compiled based on calculations so that they can be analyzed statistically. The data collected was then analyzed descriptively in order to determine the frequency distribution of gender, age, description of low, normal, and high blood glucose levels of patients.

3. RESULT AND DISCUSSION

The results showed that the most samples of people with diabetes mellitus were men, as many as 49 respondents (77.8%). Meanwhile, when viewed from the age that suffers the most from diabetes mellitus, the sample category with the age of 55 years is 15 samples (23.4%) and the age of 65 years is 14 samples (21.9%). The age of the sample who suffers the least from diabetes mellitus is the sample category with ages 43, 57, 58, 62, 71, 78 years with a total age of 1 sample (1.6%). This is in line with Manao's (2021) study which found that most patients aged 55 and 65 years had high blood glucose levels. This is because blood glucose levels in the human body are not influenced by physical activity but can also be influenced by various factors, including:

In this study, the authors obtained observations of increased examination data that reached blood glucose levels with a value of 200.00Mg/dL. This may be because the patient is taking medication and has managed a good lifestyle, so that blood glucose levels are not too high. However, in some cases, blood glucose levels will be > 200 mg/dL due to genetic factors, immunological factors, environment, age, and obesity. At Check level Low blood glucose values were not found, because the patient had been diagnosed with DM so that none of the blood sugar levels were below normal [4].

Based on the results of the study, it is known that patients who have been diagnosed with DM will tend to have high blood sugar levels, if the patient does not take medication regularly, does not do physical exercise, does not regulate a healthy diet. In this case, the increase in blood glucose levels in the respondents may be due to the acceleration of glucose intake. Increased intake of carbohydrates or glucose in respondents because respondents undergo fasting for a long period of time (> 12 hours), resulting in hyperglycemia due to high intake of glucose from the gastrointestinal tract. In a fasting state, insulin levels decrease, thereby reducing glucose uptake by the liver, muscle and fat. Glucogenolysis in the liver is the most important process to meet glucose needs in a fasting state for 12-24 hours [5]. The following is an overview of blood glucose levels in patients with diabetes mellitus:

Table 1. Frequency Distribution of Blood Glucose Levels in Diabetes Mellitus Patients at UPT Medical Laboratory Medan

Leukocyte Count	Amount	Percentage (%)
Low <70Mg/dL	0	0

Normal 70-110Mg/dL	9	15,6
Tall > 110Mg/dL	54	84,4
Total	63	100

Table 1 shows that from 63 samples of people with diabetes mellitus, samples with low glucose levels were found, namely 0 samples (0). Samples that had normal blood glucose levels were 9 samples (15.6%). Samples that had a high leukocyte count were 54 samples (84.4%). So the number of leukocytes in patients with diabetes mellitus is the highest, namely the sample with the number of high blood glucose levels and the least, namely the sample with the number of normal blood glucose levels. The results of this study are in line with the research conducted by Manao (2015) which states that the results of high glucose levels are more (84.4%) than normal blood glucose levels in 9 samples (15.6%) [3]. Based on the results of the study, it is known that patients who have been diagnosed with DM will tend to have high blood sugar levels, if the patient does not take medication regularly, does not do physical exercise, does not regulate a healthy diet. In this case, the increase in blood glucose levels in the respondents may be due to the acceleration of glucose intake.

Table 2. Statistics Based on Overview of Blood Glucose Levels in Diabetes Mellitus Patients at UPT Medical Laboratory Medan

Category	N	Min	Max	Mean
Diabetes mellitus	63	43	83	62,59

Based on the data in table 2, it is known that out of 63 respondents with typhoid fever who examined blood glucose levels in patients with diabetes mellitus, the average value was 62.59%. The lowest value of the results of the platelet count was 43% and the highest value was 83%. These results indicate that blood glucose levels are high in this study because blood glucose levels are influenced by several factors. The occurrence of an increase in blood glucose levels in patients with diabetes mellitus is due to factors of a healthy lifestyle, accompanied by less exercise and from genetic factors.

Diabetes Mellitus this type of pancreas produces less insulin, due to genetic, viral or autoimmune problems. Type I Diabetes Mellitus is caused by genetic factors, immunologic factors, and environmental factors are caused by the body's failure to utilize insulin, which leads to weight gain and decreased physical activity, in contrast to gestational diabetes which was discovered for the first time during pregnancy which is called hyperglycemia [6].

4. CONCLUSION

Based on the description of the results of the study, it can be concluded that the patients with diabetes mellitus who had the most examinations were men, a total of 49 respondents (77.8%). Meanwhile, when viewed from glucose levels as many as 54 (84.4%) respondents have high glucose levels. This is because many variations are influenced by a healthy lifestyle, age, and genetics.

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