COMPARISON OF CURRENT BLOOD GLUCOSE LEVELS WITH FASTING BLOOD GLUCOSE LEVELS IN DIABETES MELLITUS PATIENTS IN TOTO KABILA HOSPITAL

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ABSTRACT

The purpose of this study was to compare the results of the examination and determine the factors that affect blood glucose levels while with fasting blood glucose levels in patients with diabetes mellitus at Toto Kabila Hospital.

This research method uses a quantitative research approach with the type of research used in this study is an analytical observational research type. The population in this study were all patients with diabetes mellitus who had an examination. The sample used was 30 patients with a sampling technique using purposive sampling.

The results of this study indicate that the factors that affect blood glucose levels during and fasting are age, obesity, genetic history and lifestyle, and there are differences in the results of the examination. fasting blood glucose and fasting blood glucose where the results of non-parametric analysis with a significant value (2-Tailed) that is .000 <0.05, from the results obtained the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted.

Keywords: Blood Glucose, Fasting Blood Glucose, Diabetes Mellitus

INTRODUCTION

The positive impact of development in Indonesia causes changes in the clinical picture. This pattern change believed to be relatedwith changes in human lifestyle. People's diethas shifted from diet rich in carbohydrates and fiber diet rich in protein, fat and sugar.The pattern of disease that was originally dominated by infectious and infectious diseases is replaced by degenerative diseases, which is called the epidemiological transition. An increasing trend in the prevalence of non-communicable diseases, including diabetes [12].

Diabetes mellitus (DM) is a chronic disease that is a major problem in Indonesia in the world of health. DM is a group of metabolic disorders characterized by insulin secretion, insulin action, or both. Out of 90% of the diabetic population, type 2 diabetes is characterized by decreased insulin secretion, which leads to a progressive decline in pancreatic -cell function due to insulin resistance. DM is categorized into 4 types, namely type 1 diabetes, type 2 diabetes, diabetes during pregnancy, and other types of diabetes caused by other factors [13].

World Health Organization(WHO) in 2019 reported the prevalence of DM in the world was (80%). The prevalence of DM is estimated to increase by 111.2 million or (80%) at the age of 65-79 years along with the age of the population. The

number continues to grow, reaching 578 million in 2030 and 700 million in 2045. It is known, the prevalence of DM in the world (80%) is China (78%), India (70%), United States (31%), Pakistan (19 .4%), Brazil (16.8%), Mexico (12.8%), Indonesia (10.7%), Germany (8.9%), Bangladesh (8.4%) [23].

The Gorontalo Provincial Health Office reported that, in 2018 the Gorontalo province prevalence of DM based on the medical diagnosis of the population by district or city in Gorontalo province was (34.5%), of which Gorontalo City (25%), North Gorontalo (11.95%) , Bone Bolango (10.5%), Pohuwato (6.15%), Kab. Gorontalo (10%), Boalemo (12%). So the highest prevalence is in Gorontalo Province, namely Gorontalo City and the lowest is in Pohuwato (6.15%) [5].

The Bone Bolango District Health Office reported that in 2018, the prevalence of DM was (10.5%) of which 1,477 people were known to have DM in Bone Bolango District. There were 251 cases of diabetes mellitus in Suwawa Induk Subdistrict, 110 cases in East Suwawa and 69 cases in Central Suwawa". This was also revealed by Bone Bolango (2018) that “In the Suwawa Region, diabetes was ranked the 9th highest out of the 10 highest number of cases recorded during 2016 [4].

Diabetes Mellitus occurs when the body cannot produce enough insulin to maintain normal blood sugar levels or when cells do not respond properly to insulin. Insulin is a hormone secreted by the pancreas that helps keep blood sugar levels normal. Insulin carries sugar into cells, making it possible to produce energy and store it as an energy reserve [18].

The hormone insulin is produced by beta cells in the pancreas gland. Under normal circumstances, when beta cells are stimulated, the body needs to regulate blood sugar levels, so insulin is synthesized and excreted in the blood. One of the main components that causes beta cells to produce insulin is due to an increase in blood sugar levels [21].

In this type of diabetes, pancreatic beta cells continue to produce more insulin than usual, but the number of insulin receptors on the cell surface is reduced. This can reduce the amount of glucose that enters the cells, cause the cells to run out of fuel/glucose, and increase the amount of glucose in the blood [21].

Acute complications can occur when blood sugar levels rise or fall drastically in a relatively short time. Blood sugar levels can drop dramatically if the patient has a diet that is too restricted. Big and sudden changes can be fatal. Long-term complications usually develop gradually and occur when diabetes is not well controlled. High blood sugar levels, which are not controlled over time, can cause serious damage to all organs in the body [21].

High blood sugar levels can damage blood vessel and clog the flow blood to whole body,including the heart. Complications that attack the heart and blood vesselsamong others heart disease, stroke, heart attack, and constriction blood vessel (atherosclerosis). Controlling blood glucose levels and other risk factors can prevent and delay complications from cardiovascular disease. Other complications of diabetes include deafness, Alzheimer's disease, depression, and dental and oral problems. As mentioned above, adherence to medication is very

important in diabetics because various complications can occur [21].

In general, people with diabetes mellitus experience drastic physiological changes. The risk of diabetes with age, especially diabetes over the age of 45-60 years is very susceptible to diabetes mellitus, because with age, this can lead to a decrease in the ability of pancreatic cells to produce insulin [9].

One of the risk factors for diabetes mellitus is obesity. Because people weighing > 90 kg tend to be more likely to develop diabetes mellitus than people who are not obese. Obese people have excessive calorie intake. The beta cells in the pancreas may be depleted and may not produce enough insulin to compensate for the excessive caloric intake. As a result, blood sugar levels increase, which eventually leads to diabetes [9].

A person's lifestyle is also associated with an increase in the frequency of Diabetes Mellitus. This often occurs in the lifestyle of people with poor sleep quality, which is one of the risk factors for diabetes. Good sleep is one of the basic needs of all individuals, especially for diabetics, where sleep disturbances and lack of sleep can affect the increase in blood sugar levels [9].

There are 3 types of Blood Glucose Examination, namely: Blood glucose when it can be done at any time without fasting carbohydrates first or taking into account the last food intake. The current blood glucose test is commonly used as a screening test for diabetes. The normal value for blood glucose levels is less than 200 mg/dl. Fasting blood glucose was performed on patients who had fasted for 10-12 hours. These blood glucose levels can indicate overall blood glucose balance or homeostatic status, and fasting blood glucose samples should be checked regularly. Normal fasting blood glucose is 110-125 mg/dl. As for the blood glucose test 2 hours postprandial is usually done to test the metabolic response to the administration of carbohydrates 2 hours after eating**.** Glucose level blood after 2 hours usually less than 140 mg/dL. If glucose blood drops below 140 mg/dL 2 hours after eating glucose blood will back to post-elevation level, this means that the patient own mechanism drop glucose blood normal ones. However, if the results of the blood sugar test are still high, two hours after eat, it can be concluded that there is metabolic disorders blood sugar [8].

In the year of 1906's, a trend emerged new who made clinical trials practical and automatic, making progress more technology small and more easy used, especially for testing in emergency room. More broadly, POCT is expressed as a test laboratory carried out by the officer (personal) educated or sick people themselves, not by clinical laboratories [11].

Dain checking blood glucose levels, there is a number of technique which can be used to measure levels of glucose blood with glucose meter using POCT method. Two working principles that are widely used in this method are amperometric detection and reflectance. Amperometric detection is a detection method that measures the current generated during an electrochemical reaction. The way this tool works is by dripping blood on the strip, there will be a reaction between the chemicals in the blood and the reagents on the strip. This reaction produces an electric current, the intensity of which corresponds to the level of the chemical in the blood. Whereas for*reflection* defined as the ratio of the total amount of radiation reflected from

the surface (like light) with the total amount of radiation transmitted through the surface.This principle is used in glucose meters using the POCT method by reading the color formed from the reaction between a sample containing a certain chemical and the reagent in the test strip. The test strip reagent produces a certain color intensity which is directly proportional to the chemical content of the sample. Then the color formed is read by the tool from the bottom of the strip [11].

Uses and benefits of glucosometers are used to simplify and speed up clinical examination of patients, so that the results released allow doctors to make clinical decisions quickly. Currently, several types of glucosamine are available, including the Easy Touch brand glucose meter which is used to measure the level of glucose in a patient's blood sample. The advantage of this glucosometer is that test results are evaluated more quickly, so decisions are made faster. In addition, a glucosometer can be used to monitor a person's health independently without having to come to medical services. Therefore, it is more practical and efficient to measure blood glucose levels in blood samples using a glucose meter [11].

But of course the tool for checking glucose levels is this glucosometer has a number of advantages and disadvantages. Advantages of usingglucosometerThe results of rapid tests help analyze the patient's disease course, initiate further treatment steps, and the doctor conducts discussions with patients or their families to carry out treatment. No sample processing such as centrifugation is required. The use of a glucosometer does not require a scientifically trained laboratory specialist, but it can be performed by other healthcare professionals. The disadvantages of using a glucosometer for testing are that it is easy and fast and can lead to excessive or inadequate testing. When using a small number of blood samples, it is difficult to assess the quality of the sample, this affects the accuracy of the test results using a glucosimeter such as hemolysis, lipemia and drugs.

Factors that affect the results of the examination of blood glucose levels, namely: Drugs that can cause an increase in blood glucose levels, Trauma or stress can cause an increase in blood glucose levels, Smoking, can increase blood glucose levels, Heavy activity before laboratory tests, can reduce blood glucose levels. blood glucose levels, the delay in examination can reduce blood glucose levels in, this is due to the activity carried out by blood cells. Storage of samples at room temperature will cause a decrease in blood glucose levels of approximately 1-2% per hour.

RESEARCH METHODS

This research approach is a quantitative approach which aims to see the difference in the results of the examination of blood glucose levels while with fasting blood glucose levels in DM patients at Toto Kabila Hospital. The type of research used in this study is Analytical Observation, which aims to determine the differences between variables, and the analysis is to determine whether there are differences between variables.

The type of data in this study uses quantitative data in the form of words, sentences, or pictures. Sources of data in this study Researchers used primary data with the results of blood glucose examination using POCT which was carried out in the laboratory. As for secondary data, the data obtained from

searches, literature and previous research data

In this study, the population consisted of all patients with diabetes mellitus and carried out examinations in the laboratory of Toto Kabila Hospital. The samples used were patients with diabetes mellitus who underwent clinical examination at the Toto Kabila Hospital, which were taken or selected according to the criteria determined by the researcher with the assumption of 30 samples. The sampling method used was purposive sampling from patients with diabetes mellitus at Toto Kabila Hospital, with inclusion criteria, namely the sample was a patient registered as an inpatient in the Medical Record Hospital. Toto Kabila, the patient is willing to fast, the sample is willing to have blood taken for research purposes, the sample signs the consent form to become the research subject.

Data analysis in this study was using univariate analysis and bivariate analysis. Univariate analysis aims to describe the blood glucose levels while and fasting blood glucose levels in patients with diabetes mellitus in RSUD Toto Kabila, while for bivariate analysis to see the difference between blood glucose levels while fasting blood glucose levels in patients with diabetes mellitus at RSUD Toto Kabila. The presentation of data in this study is displayed in tabular form and given as a percentage, calculated using the following formula:

$$\% = \frac{f}{N} x100\%$$

RESEARCH RESULT

Table 1. Characteristics of Respondents by Age

Age	*Frequency*	*Percentage (%)*
Adult (26-45 years)	*5*	*16.7%*
Elderly (46-65 years)	*21*	*70.0%*
Seniors (>65 years)	*4*	*13.3%*

(Source: Research Primary Data, 2021)

Based on table 4.1 shows that of the 30 respondents, who are included in the adult age category (26-45 years) as many as 5 people (16.7%), the elderly age group (46-65 years) as many as 21 people (70.0%) and the last group of seniors (>65 years) as many as 4 people (13,3%).

Table 2. Characteristics of Respondents Based on Obesity

Obesity	Frequency	Percentage (%)
Normal	7	23.3%
Obesity Level 1	19	63.3%
Obesity Level 2	4	13.3%
Total	30	100.0

(Source: Research Primary Data, 2021)

Based on table 4.2, it shows that of the 30 respondents, 7 people with diabetes mellitus are not obese (23.3%), have level 1 obesity, namely 19 people (63.3%) and 4 people have level 2 obesity (13, 13). 3%)

Table 3. Characteristics of Respondents Based on Genetics

Genetics	Frequency	Percentage (%)
Not	10	23.3%
Yes	20	66.7%
Total	30	100.0

(Source: Research Primary Data, 2021)

Based on table 4.3 shows that of the 30 respondents, there were 10 people with diabetes mellitus (23.3%) with diabetes mellitus (23.3%) and 20 people (66.7%).

Table 4. Characteristics of Respondents Based on Lifestyle

Lifestyle	Frequency	Percentage (%)
Good	13	43.3%
Not good	17	56.7%
Total	30	100.0

(Source: Research Primary Data, 2021)

Table 4.4 shows that of the 30 respondents, 13 people with diabetes mellitus (43.3%) have a good lifestyle and 17 people with a bad lifestyle (56.7%).

Table 5. Characteristics of Respondents Based on the Results of Blood Glucose Examination While

GDS Results	Frequency	Percentage (%)
Abnormal (>200 mg/dL)	29	96.7%
Normal (110-200 mg/dL)	1	3.3%
Total	30	100.0

(Source: Research Primary Data, 2021)

Based on table 4.5 shows that of the 30 respondents, the results of abnormal/abnormal blood glucose examinations were 29 people (96.7%) and the normal one was 1 person (3.3%).

Table 6. Characteristics of Respondents Based on Fasting Blood Glucose Examination

GDP Results	Frequency	Percentage (%)
Abnormal (>125 mg/dL)	29	96.7%
Normal (110-125 mg/dL)	1	3.3%
Total	30	100.0

(Source: Research Primary Data, 2021)

Based on table 4.6, it shows that of the 30 respondents, the results of the fasting blood glucose examination that were abnormal/abnormal were 29 people (96.7%) and the normal one was 1 person (3.3%).

Table 7. Normality Test Results

	Shapiro-Wilk		
Check Variable	Statistics	df	Sig.
GDP Check Results	.275	30	.000
GDS Examination Results	.180	30	.000

(Source: Research Primary Data, 2021)

From the results of the Shapiro-Wilk test, the results were .000 <0.05. So it can be concluded that the data obtained are not normally distributed. Then the next non-parametric test is carried out, namely the Mann-Whitney test. This study used the Mann-Withnay test which was preceded by a normality test.

Table 8. Mann-Whitney Test Results

GDP and GDS Check	Significant (2-Tailed)	Significant level	Description
	.000	0.05	Significant

(Source: Research Primary Data, 2021)

Based on the table above, the results of the comparative analysis on Comparison of the results of fasting blood glucose examination with blood glucose while in patients with diabetes mellitus is .000 < 0.05, from the results obtained the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted, so the conclusion is that the data obtained are different.

DISCUSSION

Research conducted in Laboratory of Toto Kabila Hospital, Bone Bolango Regency, which was carried out for 30 days, starting from 19 August to 18 September 2021. Research process is descriptive observational analytic which aims to compare the results of the examination of blood glucose levels while with fasting blood glucose levels. The study was conducted by collecting data on the results of fasting blood glucose and temporary blood glucose using a glucometer.

The results of the examination were obtained from patients with diabetes mellitus who were in the hospital inpatient room, after directly meeting the patient, the researcher gave an explanation regarding the aims and objectives of this study, if the patient was willing to be used as a sample, a questionnaire was given. and informed consent to be signed. After that, the researchers took capillary blood to check blood glucose during and the next day for fasting blood glucose.The number of samples is 30 samples.

After obtaining the results of fasting blood glucose and intermittent blood glucose examinations, the researchers processed the data by conducting a normality test first, with the aim of seeing whether the data obtained were normally distributed or not, after the normality test the data was not normally distributed, so a non-parametric test was carried out, namely the Mann-Whitney test with the results that there was a significant difference between fasting blood glucose and current blood glucose in patients with diabetes mellitus.

1. Age

Age is one of the most common factors that predispose individuals to diabetes. that the increase in blood glucose occurs in the fifth decade of age and the frequency increases with age. This is because in this age range there is an increase in blood sugar caused by reduced pancreatic cell function and insulin, changes due to old age itself related to insulin resistance due to lack of muscle mass and vascular changes, and lack of physical activity. The aging process that takes place at the age of 45 years and over results in anatomical changes [7].

Based on the results of the research obtained on age characteristics and shown in table 4.1 above, that of the 30 respondents with diabetes who were included in the adult age category (26-45 years), as many as 5 people (16.7%), the elderly age group (46 -65 years) as many as 21 people (70.0%) and the last group of seniors (>65 years) as many as 4 people (13.3%).

This study is in line with research conducted by previous studies that aged >45 years had a risk factor of 1.4 times experiencing abnormal fasting blood sugar levels compared to respondents aged <45 years.Of the many theories about age in people with diabetes mellitus, as well as the findings of research results in the field that are in line with these theories, it can be said that indirectly most of the Diabetes mellitus sufferers mostly occur at the age of 45-65 years and over, which will have an impact on the results of blood glucose examinations, both during and fasting [14].

2. Obesity

Obesity is one of the risk factors for diabetes mellitus. Because people whose body weight exceeds 90 kg tend to be more likely to develop diabetes mellitus than people who are not obese. People with obesity have excessive calorie intake. Pancreatic beta cells may experience fatigue and are unable to produce sufficient insulin to compensate for excessive caloric intake [9].

On the characteristics of obesity, based on the research results obtained and shown in table 4.2 above, that of the 30 respondents with diabetes who are not obese, namely 7 people (23.3%), experiencing level 1 obesity, namely 19

people (63.3%) and there are 4 people with obesity level 2 (13,3%).

This study is in line with research conducted by previous researchers, that someone who is obese has a significant relationship with Diabetes Mellitus which is 7.14 times greater than the normal BMI group [17], as well as individuals who are obese have a risk of 2.7 times more greater risk of developing Diabetes Mellitus compared to individuals who are not obese [15].

3. Genetics

Percentage of the likelihood of developing diabetes due to heredity. If both parents (father and mother) suffer from diabetes, then the probability of their child suffering from diabetes is 83%. If one of the parents (father or mother) is diabetic, then the probability of their child suffering from diabetes is 53%. Meanwhile, if both parents are normal / do not suffer from diabetes, then the probability of their child suffering from diabetes is 15%. This is probably due to the combination of genes that carry diabetes millitus traits from the father and mother so that the age at which diabetes millitus is diagnosed is faster [20].

On genetic characteristics, based on the results of the study obtained and shown in table 4.3 above, that of the 30 respondents with diabetes the most dominant had a genetic history, namely 20 people (66.7%) and 10 people (23. 3%).

This study is in line with previous studies which showed that respondents with a family history of DM had higher glucose levels and were at a younger age than people without a family history of type 2 DM (P<0.05) [10]. The same thing was also expressed by Amu (2014) who found 30 (88.24%) of 34 people with DM were found to have genetic risk factors that came from their parents or had siblings who suffered from DM [1].

4. Lifestyle

The lifestyle of people with diabetes mellitus is seen from the quality of sleep of the respondents. Usually, poor sleep quality is one of the risk factors for Diabetes Mellitus. Adequate sleep is one of the basic needs that must be met by every individual, especially patients suffering from Diabetes Mellitus, where sleep disturbances or lack of sleep can affect the increase in glucose levels [9].

On lifestyle characteristics, based on the research results obtained and shown in table 4.4 above, that of the 30 respondents with diabetes mellitus who have a good lifestyle are 13 people (43.3%) and those who have a bad lifestyle are 17 people. (56.7%).

This study is in line with previous research which showed that most of the respondents who had poor quality were 43 people (63.2%) and a small number of respondents who had good sleep quality were 25 people (36.8%) [17]. So the researchers assumed that the quality of sleep of patients with diabetes mellitus in hospitals. Toto Kabila has poor sleep quality because out of 30 patients, there are 17 people (56.7%) who have poor sleep quality because the patient often wakes up at night to urinate, and feels pain or tingling that is felt by the patient.

5. Comparative Analysis of Blood Glucose Levels While and Fasting Blood Glucose in Diabetes Mellitus Patients

Diabetes Mellitus is a metabolic disease that is triggered by the interaction of various factors, namely genetic, immunologic, environmental and lifestyle. This disease is characterized by hyperglycemia, a condition that is closely related to damage to large and small blood vessels that ends as failure, damage or impaired organ function [2].

Diabetics usually do not pay attention to diet, eating lots of foods that contain carbohydrates. These carbohydrates are broken down into glycose, protein, amino acids, fats and fatty acids. When these nutrients are absorbed by the intestinesthen enters the blood vessels and is circulated throughout the body to be used by the organs in the body as fuel. Inside the cells, nutrients, especially glucose, are burned through a complex chemical process, the end result of which is the generation of energy. This process is called metabolism. In the metabolic process, insulin plays a very important role, which is in charge of entering glucose into cells, which can then be used as fuel [2].

Under normal circumstances insulin is sufficient and sensitive, insulin will be captured by insulin receptors on the surface of muscle cells, then open the entrance to the cells so that glucose can enter the cells and then be burned into energy / energy. As a result, glucose levels in the blood are normal. In diabetes, where the amount of insulin is insufficient or the insulin quality is not good (insulin resistance), even though insulin is present and receptors are also present, but because there is an abnormality in the cells themselves, the entrance to the cells cannot be opened, remains closed so that glucose cannot enter cells to be burned (metabolized). As a result, glucose remains outside the cells, so that glucose levels in the blood increase [19].

So, to monitor blood sugar in people with diabetes mellitus, blood glucose and fasting blood glucose are checked using a glucometer which is a tool designed to check blood glucose levels using the Point of Care Testing (POCT) method. In carrying out this research, researchers used a glucometer with the Easy Touch Type GCHb brand which adheres to the principle of amperometric detection based on changes in electrical potential formed briefly influenced by chemical interactions between the blood sample measured by the electrode and the strip. Patients who have been diagnosed with diabetes mellitus in hospitals. Toto Kabila was then regularly monitored for his blood glucose levels, blood glucose was checked intermittently one day without regard to the time of the last meal. Normal values for blood glucose range from 110-200 mg/dL. In this study, there were results of abnormal/abnormal blood glucose examinations, namely 29 people (96.7%) and normal ones, namely 1 person (3.3%) [8].

After that, fasting blood glucose examination was carried out, fasting blood glucose examination was very good as a reference for people with diabetes mellitus, because: Fasting before the test is important to help ensure that the results of the checks are accurate. This is because the fats, carbohydrates, and proteins that make up all foods and beverages can affect blood level readings, thereby clouding test results [19].

Additionally, adding pthere is a state of diabetes mellitus, blood glucose is not ready to be transferred into the cells, resulting in hyperglycemia as a result that glucose remains in the blood vessels. The pancreas tries to increase insulin production to compensate, but the pancreas has limitations. This examination is taken after the patient is fasting. Fasting means that the patient does not get additional calories for at least 8 hours [19].

The normal value for fasting blood glucose ranges from between 110-125 mg/dL. On In a study conducted by researchers, there were results of abnormal fasting blood glucose examination, namely 29 people (96.7%) and normal ones, namely 1 person (3.3%) [8]. This is in line with research conducted by previous researchers, that fasting blood glucose levels were low at 0%, normal 4 people with a frequency of 13.33%, while high fasting blood glucose levels were 26 people with a frequency of 86.67% [17].

After that, the research was tested using non-parametric methods, namely the Mann-Withney test, which is a non-parametric test option if the test *Independent T Test* cannot be done because the assumption of normality is not met. In this study, the number of samples was 30. So this study used normality analysis using the Shapiro-Wilk test. In the Shapiro Wilk test, the data is said to be normally distributed if the significant value > significant level (5% or 0.05). From the results of the Shapiro-Wilk test, the results were .000 <0.05. So it can be concluded that the data obtained are not normally distributed [16].

Then the next non-parametric test is carried out, namely the Mann-Whitney test. Comparative analysis on Comparison of the results of fasting blood glucose examination with blood glucose while in patients with diabetes mellitus is .000 < 0.05, from the results obtained the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted, so that the conclusion is that the data obtained have significant differences.

This is in line with research conducted by previous researchers, namely from medical record data for diabetes mellitus with a sample of 87 people who had test results*paired sample T-test*the obtained value of Sig (p) 0.000 < 0.10. From the results of this test, it was found that there was a significant difference between the levels of GDP and GDS in patients with Diabetes Mellitus [22].

CONCLUSION

Based on this research, it can be concluded that:

1. Results of blood glucose levels who were not normal/abnormal were 29 people (96.7%) and the normal one was 1 person (3.3%).
2. The results of fasting blood glucose levels that were abnormal/abnormal were 29 people (96.7%) and the normal one was 1 person (3.3%).
3. Factors that affect blood glucose levels while and fasting blood glucose are age, obesity, genetic history, and lifestyle.
4. There are differences in the results of the examination fasting blood glucose and fasting blood glucose where the results of non-parametric analysis with a significant value (2-Tailed) are .000 < 0.05, from the results obtained the null hypothesis (H0) is rejected and the alternative hypothesis (Ha) is accepted

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