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Research Article

Differences in Blood Sample Glucose Levels and Urine in Diabetes Mellitus Patients Type NIDDM in The Laboratory of Hospital Santa Elisabeth Medan

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Abstract

Background: Diabetes Mellitus (DM) is a something disease marked metabolic _ with increase an levels sugar blood or hyperglycemia that is not reasonable due to by insulin secretion , insulin resistance or both . Indonesia is ranked 7th out of 10 countries with amount patient 10.7 _ million . In normal people found glucose in urine when has reach threshold limit kidney to glucose blood . On inspection glucose blood and urine there is results different that is glucose blood tall whereas glucose urine negative . Destination study this is for knowing is there is difference results Among rate glucose blood with glucose urine on NIDDM type diabetes mellitus patient.

Method: Type study descriptive . Population on study this is 613 peoples , sample 50 peoples with technique quota sampling . Data collection obtained through inspection rate glucose sample blood with Siemens Dimension Xpand PLUS tools and Glucose Urine with Benedict's solution.

Results: Glucose level obtained 100% hyperglycemic blood > 200mg/dl, minimum value level sugar blood 204 mg/dl, value maximum rate sugar blood 592mg/dl, average level sugar blood 335.18 mg / dl and Results glucose urine positive (+) 11 samples , positive (++) 10 samples , positive (+++) 22 samples, positive (++++) 2 samples and negative urine (-) as many as 3 samples .

Conclusion: Conclusion there is difference results results rate glucose sample blood and glucose urine where there is sample negative urine _ on Patients with Diabetes Mellitus type NIDDM Recommended moment To do inspection glu-

Keywords: Difference , Glucose Blood , Glucose Urine , DM Type NIDDM

INTRODUCTION

Diabetes Mellitus (DM) is a metabolic disease characterized by hyperglycemia that occurs due to defects in insulin secretion, insulin action or both. [1] diabetes mellitus Type I diabetes is known as Insulin Dependent Diabetes Mellitus (IDDM) is caused due to the malfunctioning of the pancreas to produce sufficient insulin and type II diabetes or known ordinary with term Non-Insulin Dependent Diabetes Mellitus (NIDDM) is the body's inability to use insulin that has been produced. Insulin is a hormone that regulates the balance of blood sugar levels. Insulin plays a role in the transfer of glucose from extra cells into cells. Insulin functions as a glucose carrier that will deliver glucose into cells. If there is no insulin, glucose cannot enter the cells and remains circulating in the blood. Insulin causes a decrease in blood glucose and other ECF levels. [1] Hyperglycemia is term medical for state rate too much glucose in blood plasma caused by by decrease insulin secretion by pancreas or decrease sensitivity network to insulin. Normal rate glucose in blood range between 70-120 mg/ dL on moment fasting, < 140 mg/ dL 2 hours after eat and < 200 mg/ dL on measurement when. Glucose level will a little increase from instantaneous normal value after eat, but state this no considered as hyperglycemia.

Enhancement rate glucose in blood have effect direct to the kidneys. Normal glucose no found in urine due to the filtration process kidney that allows glucose reabsorbed return into the vessels blood. Threshold limit tolerance kidney to glucose ie 160 mg/dl - 180 mg/dl. If threshold limit too much so glucose will excreted to in urine because kidney no capable accommodate rate excess glucose the so that arise something condition called glucosuria. So it can be said that if the glucose in the blood is high, then there will be glucosuria in the blood, but based on observations during the service at the hospital, there were some patients who experienced high blood glucose but negative urine glucose. [2] Through the initial survey conducted writer obtained that Diabetic patients according to Record Medical House Sick Santa Elisabeth Medan 2022 visit Diabetes Mellitus patient Population in study this taken from record data medical patient patient with diabetes mellitus inpatient and outpatient at home Sick

of Santa Elisabeth Medan during 2 month final on month month January and February year 2022 with amount population as many as 618 people

Based on background behind above , then interested writer To do study about Differences in glucose levels of blood samples and urine on type diabetes mellitus patient NIDDM at Santa's Hospital Laboratory Elisabeth Medan.

METHOD

1. Study Design

Based on the problems and objectives in this study, the type of research used is descriptive using a cross-sectional approach, according to Soejono and Abdurrahman descriptive method is defined as a problem-solving procedure that can be described by describing / describing the situation / research object (a person, institution, community and others). at the present time based on the facts that appear or as they. [3] The cross-sectional approach is a survey study in which the variables studied simultaneously were carried out to determine differences in blood glucose levels and urine samples in NIDDM diabetic patients at the Santa Elisabeth Hospital Laboratory, Medan in 2022.[4]

2. Population and Sample

2.1 Population

The population in this study was taken from medical records of patients with diabetes mellitus inpatient and outpatient at Santa Elisabeth Hospital Medan for the last 2 months in January and February 2022 with a total population of 618 people.

2.2 Sample

The sample results obtained according to the bhisma murti formula are 40, so they are rounded up to 40 samples. So the number of samples used in this study were 40 samples of diabetes mellitus in St. Hospital. Elisabeth Medan in 2022.

3. Study Variabel

The operational definition is to define a variable operationally based on the observed characteristics, thus enabling researchers to make careful observations or measurements of an object. Variables that have been defined need to be explained operationally, because each term (variable) can be interpreted differently by different people. Research is a communication process that requires language accuracy so as not to cause differences in understanding between people and so that other people can repeat the research. So the operational definition is formulated for the sake of accuracy, communication and replication.

4. Operational Definition of Variables

Variable blood glucose level is an assessment based on a quantitative decrease in blood glucose, how to measure Automation method/ Laboratory examination form, measuring instruments used Dimension Xpand Plus Tool, interval measuring scale and measuring results Hypoglycemia : <110 Normal : 110-199 Hyperglycemia : >200 [5][6]

Variable Urine Glucose Levels is an assessment based on a quantitative decrease/increase in urine glucose, measuring method Manual method / Laboratory examination form measuring instruments used Benedict's solution, Ordinal measuring scale and measuring results Negative (-): clear blue, Positive(+): Greenyellowish, Positive(++): Yellow cloudy, Positive (+++): Orange/ cloudy mud color ,Positif (++++): Red turbid[7]

5. Study Instruments

5.1 Validity

Validity is a reliability that is owned in a measurement or instrument used. To find out that an instrument is valid, the instrument must be relevant both in terms of content, method and objectives. The principle of validity is measurement and observation, which means the principle of instrument reliability in making measurements to produce data. Researchers want to measure blood and urine glucose levels, it is impossible for researchers to use Benedict's solution and the Siemens Dimension Xpand PLUS tool.[8]

5.2 Reliability

Reliability is the similarity of the results of measurements or observations even though they have been measured or observed many times at different times. Efforts made by researchers to improve the reliability of measuring instruments are:

a) Check the tool before use

b) Pay attention to the principle of automation by choosing a tool that has been calibrated.

Make improvements to the instrument in the form of a questionnaire sheet to document the measurement results[8]

6. Data Analysis

Univariate analysis is an analysis that explains or describes the characteristics. Data analysis is carried out after all data is collected and processed. The data analysis technique used is univariate and bivariate data analysis which aims to explain or describe the characteristics of each research variable [9]

Data analysis techniques in research include:

1. Univariate analysis

Univariate analysis is an analysis that explains or describes the characteristics of each research variable.[9] The variables that were seen in distribution in this study were the values of

glucose levels in blood samples and urine samples in NIDDM type diabetic patients. And the results of the examination are presented in tabular form.

2. Bivariate analysis

This analysis technique is used to determine the relationship between the independent variable and the dependent variable. The test used to compare the range of blood glucose levels and urine glucose levels is the Independent Samples T-Test test if the data is normally distributed and the Mann Whitney U Test is used if the data is not normally distributed. The results are said to be significant if p <0.05. Based on this, it can be interpreted that if p < 0.05 then H0 is rejected, while if p> 0.05 then H0 fails to be rejected [10]

7. Research Ethics

The researcher has obtained permission and prior approval from the Ethics Committee of STIKes Santa Elisbeth Medan with Number 022/KEPK-SE/PE-DT/IV/2022.

RESULT

Based on research that has been conducted to NIDDM type diabetes mellitus patients who do inspection Blood glucose and urine glucose obtained results sample 50 people, ber type sex man 26 people, and woman 24 people with range 40-80 years old.

Table.1 Distribution Frequency Characteristics Respondents Based on Demographic data of patients with Diabetes Mellitus Type NIDDM Santa Elisabeth Hospital Medan 2022 .

Characteristics	Frequency (f)	Percentage %
Age		
43-49	11	22%
50-56	11	22%
57-64	10	20%
64-70	9	18%
71-77	8	16%
78-84	1	1%
Total	**50**	**100%**
Gender		
Woman	26	52%
Man	24	48%
Total	**50**	**100%**

Based on table.1 shows that presentation the most age are 43-49 years old and 50-56 years old, namely 11 people (22%), the second highest age is 57-56, namely 10 people (18%), at the age of 64-70, namely 9 people (18%) and the least is the age of 78-84 that is 1 person. Type sex woman more many namely 26 people (52%), and men 24 people (48%). Study this show at Table.2 distribution amount rate Blood Glucose where the results of blood tests found 50 people had hyperglycemia > 200.

Table.2 Frequency distribution Blood Glucose based on NIDDM type Diabetes Mellitus patient

Characteristics	Frequency (f)	Percentage %
Hyperglycemia >200	50	100%
Total	50	100%

Table.3 Statistical Results Blood Glucose Levels Based on Diabetes mellitus patient _ NIDDM type

Category	N	Min – Max	mean	SD	95% CI
DM type 2	50	204 – 592	335.18	77.191	313.24 - 357.12

Table.3 showing that of 50 respondents who carry out inspections blood glucose level The mean glucose level is 335 ,18 mg/dl with tsp deviation 77,191. N value the lowest was 204 mg/dl and the highest value was 592 mg/dl. The results of the interval estimation at the level of confidence are believed that the average value of blood glucose levels in NIDDM type DM patients at Santa Elisabet Hospital Medan is 313.24 - 357.12 mg/dl .

Table.4 Frequency distribution of NIDDM type diabetes mellitus based on urine glucose at home Santa Elisabeth Hospital Medan 2022

urine glucose	F	%
Negative (-)	3	6%
positive (+)	12	24%
Positive (++)	10	20%
Positive (+++)	23	46%
Positive (++++)	2	4%
Total	50	100%

Based on Table.4 shows that 50 respondents did urine glucose examination, where the urine glucose level was mostly positive (+++) as many as 23 people (46%), the highest was positive (++++) as many as 2 people (4 %) and negative urine glucose results (-) 3 people (6%).

DISCUSSION

Blood glucose levels in patients with Diabetes Millitus Type NIDDM who do blood glucose checks at the Home Laboratory Santa E lisabeth Medan Hospital in 2022 as many as 50 respondents In this study, the value of Lowest blood glucose levels were 204

mg/dl and the highest value was 592 mg/dl. and the average rate sugar His blood is 335.18 mg/dl. On study this got results Blood glucose levels increase in patients with Diabetes Mellitus type NIDDM where the results of blood glucose levels are above > 200. The results of increased blood glucose levels are caused because the patient has metabolic disorders characterized by increased blood sugar due to decreased insulin secretion by pancreatic beta cells and impaired insulin function. insulin resistance), this occurs because of the age factor that causes a decrease in the function of the pancreas organ in the body and because of an unhealthy lifestyle and activities carried out. This research is supported by the 2014 ENGEL study where an increase in rate glucose blood in body (hyperglycemia) due to body no by effective can generate or using insulin. state not enough or not insulin ability in responding to insulin causes increase glucose blood or what is called hyperglycemia which is a characteristic characteristics of type 2 diabetes mellitus with limitation blood plasma glucose while (random) 200 mg/ dL . Based on inspection rate glucose urine on people with diabetes mellitus type NIDDM then get results that rate glucose the most urine on positive (+++) i.e. as much 23 samples (46%). Glucose urine caused by high levels of glucose in the blood (hyperglycemia) go out together with urine, which is affected by function less kidney fine.So nephron kidney no can absorb return advantages glucose because pass score threshold kidney (threshold glycose kidney : > 170 mg/ dL). Study this supported by study (Sahat & Purba, 2018) where is glucosuria only will occur if plasma glucose exceeds threshold limit reabsorption kidney to glucose so that glucose expressed in the urine. In this study, it was also found glucose urine negative as many as 3 samples (-) this happens because the blood glucose is not too high so that kidney function still able to filter blood glucose, patients have been given treatment and medication to lower sugar in the body, do a good diet. And maybe this happened because of the wrong sampling factor. This study is supported by protein, 2018, where the results of negative urine glucose examinations in 31 patients with Diabetes Militus type NIDDM, 5 positive patients with 1 urine glucose and 4 patients with positive 4. Negative glucose levels in 77.5% of patients with type II DM, Persadia members showed kidney function in good condition. Based on the results of blood glucose and urine glucose, there were differences in results where all NIDDM type Diabetes Mellitus patients experienced blood glucose levels > 200 mg/dl while

there were positive and negative urine glucose.[7][8][11]

CONCLUSION

Based on the results of blood glucose and urine glucose, there were differences in results where all NIDDM type Diabetes Mellitus patients experienced blood glucose levels > 200 mg/dl while there were positive and negative urine glucose. This is because the patient still has good kidney function and also because of the consumption of drugs. Things that might cause the difference in these results are age, BMI (body mass index), lifestyle, organ function of the patient, errors in examination, sampling, namely taking urine and blood glucose samples that are not concurrently, taking urine glucose from the patient 's catheter. then blood glucose increases not necessarily an increase in urine as well as high blood glucose is not necessarily high blood glucose then blood and urine glucose must be checked simultaneously so that the diagnosis is correct.

CONFLICT OF INTEREST

The author declares that there is no conflict of interest in this study.

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