DESCRIPTION OF BLOOD SUGAR LEVELS AND BLOOD PRESSURE IN ELDERLY WITH DIABETES MELLITUS TYPE II IN WORKING AREA OF KABILA HEALTH CENTER

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ABSTRACT

The purpose of this study was to determine the results of examination of blood sugar levels and blood pressure in the elderly with Type II Diabetes Mellitus and to determine the risk factors that affect Type II Diabetes Mellitus in the elderly.

This research method is descriptive with a quantitative approach. The population in this study were all elderly people with Type II Diabetes Mellitus in the Work Area of the Kabila Health Center. The sample used as many as 30 respondents with a sampling technique that is using purposive sampling.

Data analysis using SPSS Version 25.0 application. The results showed that blood sugar levels were normal (63.3%), abnormal (36.7%), then normal blood pressure (63.3%), high blood pressure (36.7%), and low blood pressure (0 %). The risk factors that affect Type II Diabetes Mellitus in the elderly are age, hypertension, lifestyle.

Keywords: Blood Sugar Levels, Blood Pressure, Diabetes Mellitus, the elderly.

INTRODUCTION

Health development is basically very influential for every human being (society), individual and group [6]. Health development problems often occur by looking at the quality, where the lowest quality of health development often occurs in the elderly, due to lack of physical activity and lack of ability to live a healthy life, this can affect glucose levels in the blood, so it can cause Diabetes Mellitus, pthere are people who in particular have the age (age) more than 60 years who have a history of Diabetes Mellitus, the cause is that the organs in the elderly cannot produce insulin or their organs cannot use insulin effectively [15].

Generally (elderly) that is group individual (person) who going through change process by gradually in the near future. Older people start at least during puberty and the process continues into adulthood [16].

The prevalence of this metabolic disease can increase from time to time, this condition is economically very detrimental for both individuals and communities and countries in the world, Diabetes Mellitus has a worldwide prevalence which is predicted by the Diabetes Mellitus Organization itself (IDF)

The IDF or commonly known as the International Diabetes Federation estimates that in 2019, at least 463 million people around the world can suffer from Diabetes Mellitus starting from the age of 20-79 years, which corresponds to a prevalence rate of 9.3% of the total population at that age. age) are equivalent.

Based on gender category, IDF (International Diabetes Federation) predicts the number or prevalence of Diabetes Mellitus in 2019 is 9% for women and 9.56% for men, the number or prevalence of Diabetes Mellitus is predicted to increase along with the age of the population reaching 111.2 million (19,9%) people, over the age of 65-79 years. This number can be predicted to increase by 578 million in 2030 and 700 million in 2045 [10].

Diabetes Mellitus, known by the abbreviation DM, is a collection of metabolic diseases in the form of hyperglycemia / high amount of sugar in the blood. Diabetes Mellitus Type II is a disease in which glucose in the blood is not controlled due to changes in sensibility by cellspancreas to insulin production. The insulin regulates the amount of blood sugar, but if the intake with glucose or carbohydrates is too high, the insulin cannot balance the glucose levels, causing hyperglycemia [12].All cells receive glucose continuously, the body maintains a constant level of glucose in the blood, which is around 80-100 mg/dl for adults and 80-90 mg/dl for children, even though food supply and tissue needs change during sleep, eat and work.

Low glucose levels, i.e. hypoglycemia, are prevented by the release of glucose from the large liver glycogen stores via the glycogenolysis pathway and the synthesis of glucose from lactate, glycerol and amino acids in the liver via the gluconeogenesis pathway and by the release of fatty acids from adipose tissue stores when glucose supply is insufficient. High blood glucose levels, i.e. hyperglycemia, are prevented by conversion of glucose to glycogen and conversion of glucose to triacylglycerol in adipose tissue. The balance between tissues in using and storing glucose during fasting and eating is mainly done through the work of metabolic homeostatic hormones, namely insulin and glucagon.

Diabetes mellitus type II is a collection of metabolic problems in the form of hyperglycemia which results in abnormalities in the form of: interference with insulin secretion, insulin action, or both [2]. dissatisfied for the patient and the patient for noticeclassic symptoms of diabetes. Diabetesmellitus type II often at first not showing any symptoms special, so that when a new diagnosis is made, it can be made aware if patient treated for another obstacle, which is actually a complication of type II diabetes mellitus [26].

Patients diagnosed with Diabetes Mellitus require long-term medical therapy to reduce the incidence of complications [3]. Identification of Diabetes Mellitus in a person is done by controlling the amount of blood glucose, by not forcing it solely based on the presence of glucosuria alone [23].

Blood sugar (glucose) composed of carbohydrates with food obtained / stored and used as glycogenin the heartand also in skeletal muscle. Sugar (Glucose)is monosaccharides and fructose can increase as is fruit diet, while blood galactose can increase during pregnancy as well as breast-feed[11]. The examination that can be carried out to detect Diabetes Mellitus in a person is to observe (check) the amount of blood glucose during the POCT test [22].

Figure 1. POCT tool.
(Source: Medlab.id 2019).

POCT is a test easy (simple) by getting a number of doable samples beside the place sleep. POCT is known as test a

laboratory that can be taken anywhere so that it can be done in around patients (patients) outside the laboratory area center, good by outpatient (control) or in the hospital environment.

The purpose of this POCT tool is to make it easier and faster for researchers to carry out laboratory examinations to the patient (patient), then from that the result obtained allows the doctor to take clinical decision quickly. At recent days there are several types POCT, which has their own method, one of which is POCT Blood Glucose [13].

The advantage of using POCT is that the results of a quick examination are useful for doctors who treat patients, so they can analyze the progress of the patient's condition, can take further treatment steps and can discuss it with the patient or his family. Does not require sample handling such as centrifugation. The use of POCT does not need to use special personnel with laboratory science education, but can be done by other health workers. The use of POCT carried out by non-laboratory personnel (non-laboratory personnel), needs quality control so that the results of the examination are guaranteed and regulation (regulation) in using it, so it is necessary to regulate and determine who meets the requirements as POCT users [13].

There are several technologies that can be used to measure blood chemical levels in a POCT device. Two technologies that are often used are amperometric detection and reflectance.

*Amperometric detection*is a detection method using the measurement of the electric current generated in an electrochemical reaction. When blood is dropped on the strip, there will be a reaction between the chemicals in the blood and the reagents in the strip and the reflectance is defined as the ratio between the total amount of radiation (such as light) reflected by a surface to the total amount of radiation given off on the surface. the. This principle is used in a POCT instrument by reading the color formed from a reaction between a sample containing a certain chemical with reagents in a test strip [13].

Value of blood sugar levels can calculated in various ways different. The table below shows the classification the amount (level) of blood sugar as reference filter.The table below shows the classification the amount (level) of blood sugar as reference filter.

Blood Glucose Level (Time)	Normal	Pre Diabetes mellitus	Diabetes Mellitus
Venous plasma	Less than 100	100 to 199	200
capillary plasma	Less than 90	90 to 199	200

Source: (PERKENI, 2011)

In addition, blood pressure monitoring also needs to be done, because monitoring blood pressure in the elderly is one of the diagnoses to see if blood pressure is a factor causing Type II Diabetes Mellitus. Blood pressure is a factor that can madeas an indicator so that it can assess the cardiovascular system in an individual (a person). Blood pressure hasstrengthblood on the walls of blood vessels (arteries). The pressure must be balanced.in order to create pressure on blood, so it can't be too height (height), This can add workload on heart[30].

Normal blood pressure is less than 120 mmHg for blood pressure (systolic) and less than 80 mmHg for blood pressure (diastolic) based on WHO in the latest guidelines, the determinant of normal blood pressure is below 130/85 mmHg, so if more than 140/90 mmHg is defined as hypertension [29].

Blood pressure in the elderly affects Diabetes Mellitus due to the aging process, which can also cause narrowing of the diameter of arteries and blood vessels so

that it interferes with the transport of glucose in the blood [25]. In addition, with increasing age, aging can cause a decrease in the elasticity of blood vessel walls, which is then associated with abnormalities in the cardiovascular system so that hypertension can occur [8].

Hypertension Basically known as one of thecondition the blood pressurewith values on the threshold limitnormal. Hypertension (high blood pressure) is 140 mmHg/more parts systolic and 80/more parts diastolic. This can be dangerous for the sufferer, where the heart to pump is made to work / pump too hard. High blood pressure is usually notthere are signssigns and symptoms. Once high blood pressure occurs, it can last for the rest of life. Ifleft, complications can occur with heart disease, kidney disease, stroke, and blindness [29].

Hypotension is a condition in which a person has blood pressure below 90/60 mmHg (low enough blood pressure) which can cause several events (symptoms) from dizziness to fainting. In fact, the body is able to stabilize blood pressure because it has a certain mechanism. Stability in blood pressure is very important because the pressure to pump blood must be high enough to supply oxygen, nutrients to all cells in the body by eliminating waste products produced [29].

Figure 2.2 Digital Tensimeter
(Source: medicalogi.com 2021)

The tool for measuring blood pressure in this study is a digital method, where a very simple and practical tool is used so that it does not require a stethoscope to be used. With a blood pressure monitor, researchers simply turn on or turn on the device and pump the cuff to determine a person's blood pressure. The device automatically measures blood pressure and is displayed as a number on the LCD screen [30].

The risk factors for Type II Diabetes Mellitus are: Age, hypertension, lifestyle. Age,Ugenerally sufferer Type diabetes mellitus II can make changes to physiologicaldrastic. Diabetesmellitus type II usually occur on parent from age 60 years is very vulnerable against diabetes mellitus, which is because the body cannot again produce the hormone insulin effectively with age [23].

Lifestyle, someone is also related to increase incidence of type diabetes mellitus II that often happens in someone's lifestyle through smoking, alcohol which influence case increase type diabetes mellitusII. Alcohol can affect the process of blood sugar metabolism can make it difficultSettings blood sugar and increase blood pressure patient.

The prevalence of Diabetes Mellitus in Indonesia is ranked seventh out of 10 countries with the highest prevalence of 10.7 million people. In Southeast Asia, and Indonesia ranks third with a prevalence of 11.3% [20][10].

Gorontalo Province showed the prevalence of Diabetes Mellitus of 7,792 (2.41%), with the highest number in Bone Bolango Regency 1,054 people (1.84%) and the lowest in Boalemo Regency (0.73%). In addition, the results of observations in the working area of the Kabila Health Center in the elderly with Diabetes Mellitus increased from 2020 to 2021 [21].

The results of observations of the elderly (elderly) with a diagnosis of Diabetes Mellitus in the Work Area of the Kabila Community Health Center amounted to 170 people (6.59%) in 2020 with 364 people (15.1%), while from January to 2021 in May , 156 people (10.6%) including the elderly who control

blood pressure up to 299 people (22.5%) [18].

RESEARCH METHODS

The approach and type of research used is a quantitative approach Descriptive in nature which has the aim of knowing the description of blood sugar levels and blood pressure in the elderly with Type II Diabetes Mellitus.

The types and sources of data used in this study are primary data, namely the results of checking blood sugar levels and blood pressure in the elderly with type II Diabetes Mellitus in the Kabila Health Center Work Area, and secondary data, namely the results of observations in the form of initial observation notes on elderly patients suffering from diabetes. Type II Diabetes Mellitus and blood pressure in the elderly who did an examination in the work area of the Kabila Health Center, then the data source used a questionnaire according to the answers from the respondents, the results of documentation, and the results of laboratory tests. The data from this study also consisted of data on the number of elderly people with Type II Diabetes Mellitus in the Work Area of the Kabila Health Center.

The population in this study is the entire elderly (elderly) with Type II Diabetes Mellitus in the working area of the Kabila Health Center. The sample in the study that will be used, part of the elderly population suffering from Type II Diabetes Mellitus in the working area of the Kabila Health Center is to see if the sample is answered by taking a predetermined sample, with the number obtained from the calculation of the unknown population formula, namely 30 samples. The sample size of this study is unknown. The sample size formula is:

Formula : $n = \frac{Z2.\ P(1-P)}{d2}$

The sampling technique used in the study used a purposive sampling technique; where all populations are determined by certain criteria or considerations. The data analysis technique uses SPSS Version 25.0 application and is presented in tabular form.

RESEARCH RESULT

Table.1 Distribution of Respondents' Blood Sugar Levels (Amount) in the Work Area of PKM Kabila.

Level (Amount) Blood Sugar	Frequency	Percentage (%)
Normal	19	63.3
Abnormal	11.	36.7
Total =	30.	100.0

(Source: Primary Data, 2021)

The table above shows that the elderly with a history of Type II Diabetes Mellitus who have normal blood sugar levels are 19 respondents (63.3%) so that respondents (patients) who have abnormal blood sugar levels are 11 respondents (36.7%) in the Work Area. Kabila Health Center.

Table.2 Distribution of Blood Pressure Samples for Elderly Patients with Type II Diabetes Mellitus with Criteria in the PKM Kabila Working Area.

Pressure Blood	Frequency	Percentage (%)
Normal	5	16.7
Pre Hypertension	14	46.7
Hypertension	11	36.7
Hypotension	0	0
Total =	30	100.0

(Source: Primary Data, 2021)

The table above shows that patients who are included in the respondents who

have normal blood pressure are 5 respondents (16.7%), then respondents with pre-hypertensive blood pressure are 14 respondents (46.7%). hypertension was 11 respondents (36.7%), with none of the respondents (patients) having blood pressure in the category of hypotension in the Kabila PKM Working Area.

Table.3 Distribution of Risk Factor Samples by Age of Respondents in the PKM Kabila Work Area.

Age (age)	Frequency	Percentage (%)
seniors	23	76.7
Old Age	7	23.3
Very Old Elderly	0.	0
Total =	30	100.0

(Source: Primary Data, 2021)

The table above shows that there are some of the 30 elderly patients (respondents) with Type II Diabetes Mellitus, the majority of which are the Elderly group with a total of 23 people (76.7%.) while the category of elderly elderly is 7 people (23.3%.) then there are no elderly people with Diabetes Mellitus Type II who are included in the category of Very Old Elderly in the Work Area of the Kabila Health Center.

Table.4 Distribution of Risk Factor Samples by Lifestyle.

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

(Source: Primary Data, 2021)

Based on the table above, it can be seen that the elderly with Type II Diabetes Mellitus have a good lifestyle, namely 13 respondents (43.3%) and those who have a poor lifestyle are 17 respondents (56.7%).

DISCUSSION

Diabetes Mellitus Type II is characterized by an increase (increase) in sugar in blood, that's why somebody usually experience symptom polyuria (many voiding), often feel thirsty polydipsia), often feel hunger or so-called polyphagia. (World Health Organization, 2018). Type II diabetes mellitus can be diagnosed by regulating or controlling the amount (level) of sugar in the blood. In addition to controlling the level or amount of sugar in the blood, it is also necessary to look at controlling blood pressure in the elderly who have a history of type II diabetes mellitus (patients).

A. Blood Sugar Level Check Results

The results of the study describe blood sugar levels in the elderly who have a history of or suffer from Type II Diabetes Mellitus with a sample of 30 respondents, the results of the examination of normal blood sugar levels are 19 respondents (63.3%), and those who have abnormal blood sugar levels are 11 respondents. (36.7%). Based on previous research, it was found that there was a relationship between blood sugar levels and blood pressure in the elderly with Type II Diabetes. have abnormal blood glucose levels (amount) that is 32 people (42.6%), so it can be seen that the Spearmen Rank test results show the value of = 0.017, Based on research with the results obtained the percentage of levels (amount) of glucose in normal blood is very much in number than abnormal blood sugar levels (hyperglycemia). Normal blood sugar levels or amounts for the elderly who have a history of Type II Diabetes Mellitus need to be regulated so that no further organ damage occurs, then for high blood sugar levels or what is known as hyperglycemia conditions

can cause abnormalities in the kidneys, namely changes in kidney structure. [6].

The level or amount of glucose in the blood is the amount or level of glucose in the blood plasma. The level (amount) of glucose in the blood must be maintained by remaining within normal limits so that it does not cause disturbances (problems) to the body. Levels (amount) of glucose in the blood for a history of type II diabetes mellitus patients fluctuate during the day and increase after food consumption. Glucose levels are lowest in the morning before eating. At this point, the pancreas continues to release small amounts of insulin, while glucagon is released when blood sugar levels drop, which stimulates them to release their stores of glucagon, so that insulin and glucagon send messages to maintain or keep the level (amount) of glucose in the blood the same. 24].

B. Blood Pressure Check Results

In the results of measuring blood pressure for elderly people with Type II Diabetes Mellitus with normal blood pressure, there were 5 respondents (16.7%), then those who had pre-hypertension blood pressure were 14 respondents (46.7%), and blood pressure in the hypertension category was 11 respondents (36.7%), with the category of hypotension (0%) in the Kabila Health Center Work Area. Previous research obtained results about the relationship between blood sugar levels and blood pressure for patients with Type 2 Diabetes Mellitus, by looking at normal blood pressure, there were 27 respondents (55.1%) systolic and 35 respondents (71.4%) diastolic. There were 22 people with high blood pressure (44.9%) systolic and 14 people (28.6%) diastolic [7].

Blood pressure for patients Type diabetes mellitus II is abnormal when the amount of glucose in the blood height and have various consequences, such as the breakdown of the capillaries (called blood vessels) fine), the occurrence of damageon capillary in the kidney could influence strength kidney to regulate blood pressure and this can make blood pressure high, that's why there is the close relationship between hyperglycemia, with blood vessel, Endothelial damage causes formation lesson coronary atherosclerosis, which then causing cardiovascular disease.

Blood pressure is very important for a person because it includes the driving force what makes the blood permanent flows (circulates) throughout the body to supply new blood (fresh) with oxygen and nutrients to all internal organs body. Enhancement blood pressure many found on type diabetes mellitus II, with prevalence reach 50-70%. Blood pressure is one of the most important factors in the circulatory system. An increase or decrease in blood pressure can disrupt the homeostasis of the body. Unfulfilled blood flow can cause problems with the carrier system for oxygen, carbon dioxide, and other metabolic products [1].

C. Age

Based on the risk factors for the age of people with Type II Diabetes Mellitus, it shows that respondents who are included in the elderly category are 23 people (76.7%), and the elderly category group is 7 people (23.3%), as well as respondents in the advanced category. very old age amounted to 0 respondents (0%) or there were no respondents in the

study. This is in line with previous research with the results obtained that the mean age of the respondents is 64.38 ± 9.719 years. Dominant can be said at the age of 61-80 have Diabetes Mellitus Type II [7]

Age is the age of a person or individual which is calculated from the time a person is born until his birthday. seniors including part of the family as well as part Public, with an increasing number alongan increase in life expectancy. Common problems that are oftenin nature Elderly is the magnitude of the risk of physical conditions or conditions for various diseases as a result of the decline activity in the body, so that elderly susceptible to various diseases. Disease onparents happen physical changes to the system endocrine, so that it can cause increase total glucose in blood against parents [27]. Then based on the research obtained previously, found that there is some changes in blood pressure elderly, one of them exacerbated by hyperglycemia, where hyperglycemia can trigger the process of glycolysis which can cause further glycation. final product (centuries) [17].

D. Lifestyle

Based on risk factors by looking at the lifestyle of the elderly in Type II Diabetes Mellitus sufferers in the Work Area of the Kabila Health Center, the respondents who have a good lifestyle are 13 respondents (43.3%) and those who have an unfavorable lifestyle are 17 respondents (56, 7%). This research was previously carried out with the results that the pattern or lifestyle is associated with an increase in the frequency of Type II Diabetes Mellitus, although the amount of this increase often occurs by linking an increase in obesity and lack of physical inactivity, factors that have a relationship with changes in the environment such as consuming alcohol, smoking and consuming other beverages, causing an increase in the frequency of Type II Diabetes Mellitus [17].

The risk factor for lifestyle or lifestyle for people with Type II Diabetes Mellitus is to describe a person's style with a focus on efforts to take care of physical, moral and social conditions. Lifestyle or pattern involves skills to sleep, eat, control weight, do not consume cigarettes or alcohol, do sports skillfully and regularly and are good at controlling stress [31].

Lifestyle or pattern is generally known as a way of life of people by identifying these other people using their time (activity) related toone's work, one's hobbies, one's shopping, one's sport. Lifestyle isgathering the behavior of a person important for individuals and everything else somewhere place at time which same [9].

According to previous research, the lifestyle of a person or society can be different from others. In fact, a person and other community groups will change dynamically from time to time. In addition, lifestyle or lifestyle can be described for the lifestyle of an individual (a person) which is expressed such as interests, opinions, and activities such as consuming alcohol, smoking, and regulating diet [14].

CONCLUSION

The results obtained in the study on the amount of blood sugar levels with blood pressure for the elderly with a history of Type II Diabetes Mellitus which

was carried out at the Kabila Health Center, Bone Bolango Regency, it can be concluded that:

[1] The results of blood sugar levels in the elderly with a history of Type II Diabetes Mellitus in the Work Area of the Kabila Health Center were normal blood sugar levels of 63.3% and abnormal blood sugar levels of 36.7%.

[2] The results of the blood pressure of the elderly with a history of Type II Diabetes Mellitus in the Work Area of the Kabila Health Center were normal blood pressure 16.7%, pre-hypertension blood pressure 46.7%, and hypertension 36.7% and then 0% hypotensive blood pressure.

[3] The risk factors for the elderly (elderly) with Type II Diabetes Mellitus at the Kabila Public Health Center, especially in the Work Area, are age, hypertension, lifestyle or lifestyle that involves sleeping habits, behavioral patterns of controlling food, controlling weight, consuming cigarettes/alcohol and exercising regularly. .

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