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# Intermittent Blood Glucose Examination In The Community Of Rt 25 Sawah Lebar Urban Village, Ratu Agung Sub-District, Bengkulu City, Bengkulu Province

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**Abstract.** The importance of community service activities is to help the community, especially people from the lower middle class, to carry out supporting examinations for cardiovascular diseases which are often suffered by the community. The aim of this community service activity is to find out the results of blood glucose examinations in the community at RT 25, Sawah Lebar Village, Ratu Agung District. Bengkulu City. Blood sugar or blood glucose is sugar found in the blood and comes from the formation of carbohydrates from food and is stored as glycogen in the liver and skeletal muscles. The insulin hormone is a hormone that affects blood sugar levels. The reference value for blood glucose levels in plasma is 70-110 mg/dl, glucose 2 hours post prandial (after glucose administration)  $\leq 140$  mg/dl/2 hours, and immediate blood glucose  $\leq 110$  mg/dl. The method is carried out by taking a brief history and checking blood sugar levels with a device. After the examination, it was found that of the 32 people examined, 1 of them had high blood sugar levels, and the other 31 people were normal. It is best to check blood sugar levels on an ongoing basis to prevent non-communicable diseases as early as possible, especially for people who have the potential to experience this disease and for people who already suffer from Diabetes Mellitus, they can control their blood sugar levels so that they remain within reasonable limits so that complaints of signs and symptoms do not occur. which is undesirable.

**Keywords:** *Diabetes Mellitus, Blood Glucose Level Examination.*

## INTRODUCTION

Glucose is one of the important carbohydrates used as a power source that acts as energy formation. Glucose is produced from foods that contain carbohydrates consisting of monosaccharides, disaccharides and also polysaccharides. Carbohydrates will be converted into glucose in the liver and then useful for the formation of energy in the body. Glucose is stored in the body in the form of glycogen stored in blood plasma (blood glucose). Glucose functions in the brain and as fuel for metabolic processes (Norma & Nailufar, 2020; Vivi & Elman, 2021).

Blood glucose is sugar in the blood that is formed from carbohydrates in food and stored as glycogen in the liver and skeletal muscles. Hormones that affect glucose levels are insulin and glucagon from the pancreas. Reference values for blood glucose levels in serum/plasma are 70- 110 mg/dl, two-hour post prandial glucose (after glucose administration)  $\leq 140$  mg/dl/2 hours, and blood glucose during  $\leq 110$  mg/dl (Sunita, 2021).

Diabetes mellitus (DM) is a disease, in which the condition of glucose levels in the blood exceeds normal limits. This is because the body cannot release or use insulin adequately. Insulin is a hormone released by the pancreas and is the main substance responsible for maintaining balanced blood sugar levels in the body. Insulin functions as a tool that helps sugar move into cells so that it can produce energy or be stored as energy reserves (Mahdiana, 2014; Oktaviana, 2022).

An increase in blood glucose levels is a common symptom that occurs in people with diabetes mellitus. Therefore, it causes various complications in the body, especially in the blood vessels to the brain, heart, periphery, nerve cells, eyes, and kidneys (Balck & Hawks, 2014; Oktaviana, 2022). If left untreated, it can cause various complications both acute and chronic (Winardi, 2019; Oktaviana, 2022).

According to the World Health Organization (2023) Approximately 422 million people worldwide have diabetes, the majority living in low- and middle-income countries, and 1.5 million deaths are caused directly by diabetes each year. Both the number of cases and prevalence of diabetes have been steadily increasing over the past few decades. The latest data from the International Diabetes Federation (IDF) (2021) states that around 19.46 million people in Indonesia have diabetes. There was an increase of 81.8 percent compared to the number in 2019. This figure positions Indonesia as the country with the fifth highest number of people with diabetes in the world (after China, India, Pakistan and the United States). In fact, Indonesia is the only one in Southeast Asia that is included in the top 10 countries with the most cases (IDF, 2021). Based on the Indonesian health survey in 2023, the prevalence of Diabetes Mellitus based on a doctor's diagnosis was 877,531 cases. If based on gender, the number of people with Diabetes Mellitus in men is 1.3% and women are 2% (Indonesian Health Survey, 2023).

Based on data from the Bengkulu Provincial Health Office, the number of cases of Diabetes Mellitus in 2023 was 3,746 cases. In Bengkulu city, there are 3,149 cases of diabetes mellitus in 2021, 3,087 cases in 2022 and 1,142 cases in 2023. There are two factors that can affect glucose levels in a person's body, the first is endogenous factors (humoral factors) such as insulin, glucagon, and cortisol useful for the receptor system in liver and muscle cells. Second, exogenous factors such as the amount and type of food consumed. According to other studies, blood glucose levels are influenced by a person's characteristics (gender, age, family history of diabetes), dietary factors (high energy, high carbohydrate, high fat, high protein, and low fiber), lack of physical activity, hypertension, nutritional status (BMI and abdominal circumference), and knowledge about nutrition (Suryanto & Puspita, 2020).

Diabetes is widely recognized by people as a disease that is closely related to food intake. The cause of the onset of this disease is due to the lack of people in maintaining a diet, such as in 3 things, namely the type of food consumed, the portion of meals a day, and the frequency of meals (Aulia, 2021; Susanti. et al., 2023). One way to reduce blood glucose levels and reduce the risk of diabetes mellitus is by dieting (maintaining a healthy diet). Diet in the community still needs to be encouraged and continues to need counseling and learning to improve the health status of the community (Rukmana et al., 2019; Susanti. et al., 2023).

Factors that can cause changes in blood glucose levels during stress, infection, consumption of certain drugs, heredity, imbalance between foods eaten (irregular diet), physical activity (Firgiansyah, 2016; Susanti. et al., 2023).

Community service is a health service activity to improve the quality of public health on the importance of healthy living without contracting a disease that is not realized by the lower middle class. The importance of Pengabmas activities is to help the community, especially the lower middle class, to carry out supporting examinations for diseases that are often suffered by the community. Because without being realized by the community that this examination must be carried out at least once a month to prevent contracting a disease.

The purpose of Pengabmas is to improve the quality of life and welfare of the community. However, the quality of health is influenced by various factors, especially the environment and community behavior factors. Therefore, community service activities are not limited to the field of health services, but also include activities other than health related to improving health status and improving the quality of life of the community

## RESEARCH METHODS

The research method at least describes the approach used in the research, the population and research sample, explains the operational definition of variables along with data measurement tools or how to collect data, and data analysis methods. If the data measurement tool uses a questionnaire, it is necessary to include the results of the validity and reliability tests of the research instrument.

## RESULTS AND DISCUSSION

This community service activity was carried out on July 14, 2024 at the Masji Al Kautsar RT 25 yard, Sawah Lebar Village, Ratu Agung Subdistrict, Bengkulu City. The design of this activity uses an observational descriptive design, namely describing the results of blood glucose testing based on observations in the field.

The stages in this community service are direct socialization to the community about DM disease, registration which is carried out to record the number of people who carry out glucose checks and glucose checks to people who have registered. Before the activity of measuring blood glucose levels, information was first given about the importance of checking blood glucose levels in people with Diabetes Mellitus. Measurement of blood sugar levels by the team and recording the results of measuring blood sugar levels on the observation sheet. Health education was given about the prevention of increased blood sugar levels in people with Diabetes Mellitus and the importance of checking blood sugar levels regularly as well as if the patient feels the onset of signs and symptoms of increased blood sugar levels.

Characteristics Based on Gender.

**Table 1. Distribution Based on Gender**

| No.          | Gender | Timely blood sugar examination |             |
|--------------|--------|--------------------------------|-------------|
|              |        | Total(Patients)                | Percent (%) |
| 1.           | Man    | 13                             | 40.6%       |
| 2.           | Woman  | 19                             | 59.4%       |
| <b>Total</b> |        | <b>32</b>                      | <b>100%</b> |

Based on Table 1. obtained the number of people who did the test of blood glucose as many as 32 people consisting of 13 men with a percentage of 40.6% and 19 women with a percentage of 59.4%.

Characteristics Based on Age

**Table 2. Distribution based on age**

| No.          | Age(Year) | Total (People) | Percent(%)  |
|--------------|-----------|----------------|-------------|
| 1.           | 12-16     | 1              | 3.1%        |
| 3.           | 36-45     | 5              | 15.6%       |
| 4.           | 46-55     | 12             | 37.5%       |
| 5.           | 56-65     | 14             | 43.8%       |
| <b>Total</b> |           | <b>32</b>      | <b>100%</b> |

Based on Table 2. shows that people who do blood glucose testing during the age of 12-16 years are 1 person (3.1%), age 36-45 as many as 5 people (15.6%), age 46-55 as many as 12 people (37.5%), age 56-65 as many as 14 people (43.8%).

Characteristics based on age

**Table 3. Frequency Distribution of Blood Sugar Level Screening**

| Criteria     | Frequency | Percent (%) |
|--------------|-----------|-------------|
| <200 mg/dl   | 1         | 3.1%        |
| >200 mg/dl   | 31        | 96.9%       |
| <b>Total</b> | <b>32</b> | <b>100%</b> |

Based on the table above, the blood sugar criteria >200 mg/dl has a value of 3.1% while the blood sugar criteria <200 mg/dl has a value of 96.9%.

Glucose is one of the important carbohydrates that is mostly absorbed into the bloodstream in the form of glucose and other sugars. Carbohydrates that have been absorbed by the body are then converted into glucose in the liver. Glucose is a form of carbohydrate that functions to produce energy. Blood glucose levels have a very close relationship with Diabetes Mellitus. Blood glucose levels  $\geq 200$  mg/dL are then followed by the onset of polyphagia, polydipsia, polyuria, and weight loss. Elevated blood glucose levels and the onset of these symptoms are one of the techniques in diagnosing Diabetes Mellitus (Amir et al., 2015). Diabetes mellitus can occur due to high dietary nutrients such as carbohydrates/sugar, protein, fat, and energy consumed by a person. The higher the food intake, the greater the possibility of Diabetes Mellitus (Bistara, 2018). Some other diseases due to lack of attention to healthy food consumption arrangements include cancer, osteoporosis, hypercholesterolemia, coronary arteries, cirrhosis, and several cardiovascular diseases (Husain et al., 2015).





**Figure 1 Blood Sugar Checking to the Community of RT 25 Sawah Lebar Village**

The success of this program was supported by several internal strengths, such as the participation of the community in RT 25 Sawah Lebar Village, CI Puskesmas Sawah Lebar, and good coordination by Field Supervisors. Behind the success of the series of activities above, there are obstacles obtained such as the busy schedule of the community because the majority of residents work as traders, limiting participation.

## **CONCLUSION**

This health check activity is a very important activity to help improve the welfare of life and help determine the condition of the disease early on. It is proven that this blood sugar checking activity has several people who have abnormal blood sugar levels, namely high blood sugar levels and low blood sugar levels. With this examination activity, it can help people know the condition of their bodies, especially blood sugar levels.

Overall, this community service program succeeded in achieving its main goal in increasing public awareness in knowing about diabetes mellitus. And it is also recommended that the community continue to check blood sugar once a month at the health service in order to prevent diabetes mellitus.

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