

EDUCATION ON THE IMPORTANCE OF MAINTAINING BLOOD SUGAR LEVELS

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ABSTRACT

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Background : Diabetes is a disease that, if not managed properly, can lead to further complications. Proper diet and food selection can help control this disease. Lack of knowledge about diabetes mellitus and the appropriate foods to consume is the main reason for conducting this activity. **Method**: This activity involved providing education and local cooking demonstrations related to diabetes mellitus in Gemulung Village, with 23 participants. **Result**: There was an improvement in knowledge following the education and cooking demonstration about diabetes mellitus. Blood glucose examination results showed that 3 participants had diabetes, 1 had pre-diabetes, and 18 were in the normal category. **Conclusion** : Increasing knowledge about diabetes mellitus can be achieved through education and cooking demonstrations. Sustainable efforts are needed to prevent diabetes mellitus.

1. INTRODUCTION

Diabetes is a chronic disease related to blood glucose levels, commonly known as diabetes, caused by the body's inability to regulate blood sugar levels. This condition occurs due to a lack of insulin or the absence of insulin production.¹ Indonesia is among the countries with the highest number of diabetes mellitus (DM) cases, with 10.3 million individuals affected, projected to rise to 16.7 million by 2045. According to the International Diabetes Federation (IDF) in 2023, Indonesia ranked fifth globally with 19.5 million diabetes cases.² This situation is concerning given the number of individuals who lack adequate education on the management, prevention, and dietary patterns for diabetes mellitus. If left untreated or undiagnosed early, this disease

can reduce life expectancy and lead to complications or death. The most significant chronic complications include cardiovascular disease, stroke, diabetic foot, retinopathy, and diabetic nephropathy. Compared to non-diabetic individuals, people with DM are 5 times more likely to develop gangrene, 17 times more likely to experience kidney abnormalities, and 25 times more likely to become blind. Therefore that knowledge and understanding about factor risk , handling as well as prevention of diabetes mellitus is very necessary³.

Management of diabetes mellitus relies heavily on a healthy and controlled diet. However, many individuals with diabetes mellitus struggle to choose appropriate ingredients and prepare nutritious, tasty meals. This indicates a lack of understanding regarding low glycemic index

local foods, which is a challenge in blood sugar control. In fact, Indonesia has abundant local food resources such as sweet potatoes, cassava, sorghum, fruits, and vegetables, which can serve as healthy alternatives for people with DM.^{4,5}

In addition, education on cooking methods using healthy and appropriate local ingredients for diabetes mellitus patients is still limited. A study show that training cook based on material local can increase knowledge and skills public in manage food for DM sufferers. Education like This important for ensure that the sufferers No only understand need nutrition them , but also able to apply it in life daily.^{6, 7}

This community service activity provides education and cooking demonstrations using local ingredients to support diabetes mellitus management at the individual and community levels. This activities aiming increase awareness, knowledge and skills participant about importance pattern eat healthy based on material local as part from control of diabetes mellitus.

2. METHOD

This community service activity is an educational program in the form of cooking counseling and food demonstration for people with diabetes. The purpose of this activity is to help the community understand methods for combating and preventing diabetes, as well as to introduce local ingredients that can be used to prepare healthy snacks. This community service activity was held on Monday, December 2, 2024, and attended by 22 participants in Gemulung Village.

The counseling was conducted interactively, allowing two-way communication through direct interaction and a question-and-answer session. The material presented focused on healthy lifestyle patterns, specifically the treatment and prevention of diabetes mellitus. After the question-and-answer session, a cooking

demonstration was conducted to showcase healthy snack alternatives suitable for people with diabetes. Data collection was carried out through health assessments, including measurements of weight, height, blood pressure, and blood sugar levels. Pre-tests and post-tests were also conducted to assess the necessity and effectiveness of this activity.

3. RESULTS AND DISCUSSION

Before do counseling for participants requested do inspection health which includes check weight , height , pressure blood and blood sugar. Examination results health show index mass body weight (BMI) of participant with excess overweight is 5 people, participants with 15 people had normal BMI results , and 1 person showed underweight results category excess weight has significant relationship with improvement risk of Type 2 Diabetes Mellitus. This is caused by insulin resistance, inflammation chronic, and dysfunction metabolism consequence accumulation of body fat. Changes pattern eat healthy and active physique can increase insulin sensitivity and prevent development of diabetes.^{8,9}

Patients with diabetes mellitus who are underweight may also be more likely to develop heart failure. This is consistent with a Korean study that found the underweight group was at the highest risk of heart failure. Losing weight can lead to muscle and fat atrophy, which raises the risk of heart failure. A number of factors have been proposed as possible reasons for elevated CVD risk in the underweight population, including aging, sarcopenia, and poor nutritional status.¹⁰ Other studies also stated that compared to the reference group (BMI < 25/<25 kg/m²), the BMI ≥ 25/≥25 kg/m² group had the lowest incidence of ESRD risk among DM patients, according to BMI change analysis. Patients who lost at least 10% of their body weight over two years had the highest chance of developing

end-stage renal disease (ESRD), per the body weight change analysis.¹¹

Pressure results blood from the participants namely 12 people experienced high blood pressure and 10 other people have normal blood pressure. In people with diabetes, the increase pressure blood tall can happen because a number of matter among them insulin resistance which can which can trigger improvement activity system nerve sympathetic, dysfunction cell endothelium cause constriction vessels blood (vasoconstriction), which results in improvement pressure blood. Hyperglycemia in diabetes causes salt and water retention through kidneys, so that increase blood volume and improve pressure blood.¹²

Check up result blood sugar levels shows 3 people level the sugar exceeding 200 mg/dl, 1 person showed pre-diabetes signs with results examination 163 mg/dl, and 18 other people The results are normal. The number of results inspection normal blood sugar levels because inspection health Enough often done and usually people will reduce sweet food approaching examination for results good. The results of a blood sugar test that indicate pre-diabetes are sign important For quick do change style life healthy. Pre-diabetes is a condition in which blood sugar levels are high more tall from normal, but not yet reach threshold for the diagnosis of Type 2 Diabetes Mellitus. Pre-diabetes indicates existence disturbance metabolism glucose that is needed intervention early For prevent Progression become actual diabetes.^{13,14}

After done inspection health then the participants gather for follow ask answer short about diabetes before giving material counseling. Purpose of the question answer that is done is for measure how far is the understanding they about diabetes and patterns life healthy that already applied. More thorough instruction and examples of foods that diabetics need are required, as the Q&A findings revealed that the

participants did not completely grasp diabetes and leading a healthy lifestyle, particularly for those with the disease. After discussion short so to be continued with giving material counseling that explains about diabetes, causes, signs and symptoms, impacts, prevention, patterns life healthy, and safe food for diabetes sufferers.

During the material given participants can ask the speaker directly if there is something they do not understand Participants are quite enthusiastic especially the material on how to implement a healthy lifestyle for diabetics and examples of food menus that can be made by diabetic patients not smoking normal body mass index doing physical activity for at least 30 minutes every day reducing or not consuming alcohol and paying attention to a healthy food menu every day are references in reducing the risk of developing noncommunicable diseases especially diabetes Highfiber foods are also good for diabetics.¹⁵ Investigate appears thah higherfibre diets are an vital component of diabetes administration coming about in changes in measures of glycaemic control blood lipids body weight and aggravation as well as a diminishment in untimely mortality. These benefits were not kept to any fiber sort or to any sort of diabetes and were clear over the extend of impalpable in spite of the fact that more noteworthy enhancement in glycaemic control were watched for those moving from moo to direct or tall immaterial based on these discoveries expanding every day fiber admissions by 15 g or to 35 g can be a sensible target that would be anticipated to diminish hazard of untimely mortality in grown-ups with diabetes. One type of diet that is suitable for diabetes is the Mediterranean diet which is a diet high in healthy fats protein and fiber and low in sugar and saturated fat.^{16,17}

Next event is a cooking demo material food local that can made into interlude For diabetes sufferers . Local ingredients used is apples , sweet potatoes and raisins , but For raisins its nature is

optional because depends from appetite. Products produced a kind of cupcake, mashed apple and sweet potato then mixed become one then can added piece raisins then steamed . There is no adding sugar, because the sweet taste remains will obtained from sweet potatoes. The finished result is called appplecake, and it takes roughly 45 minutes to cook. The participants closely observed cooking techniques and occasionally raised questions when something was unclear. Apples and sweet potatoes are material low food content index glycemic so that suitable for diabetes sufferers.^{18,19}

Research conducted in the area Lamongan state that that sweet potato consumption boiled purple effect to decline blood sugar levels.²⁰ Meta-analysis investigate appears that Low-GI diets were viable at lessening glycated hemoglobin (HbA1c), fasting glucose, BMI, add up to cholesterol, and LDL, but had no impact on fasting affront, HOMA-IR, HDL, triglycerides, or affront prerequisites. The diminishment in fasting glucose and HbA1c was conversely connected with body weight. The most prominent decrease in fasting blood glucose was seen within the considers of the longest length.²¹

Documentation from activity devotion public with theme “Live More Colored With Maintaining Sugar Levels”



Figure 4.1 Documentation of community service activities (Education) Importance Maintaining Blood Sugar Levels)

4. CONCLUSION

Education and cooking demonstrations were conducted give influence on increasing knowledge related diabetes mellitus disease. Society becomes more understand about handling, prevention and materials local that can made into alternative interlude For diabetes sufferers. A more realistic image of healthy snack menus that may be prepared at home is also given by the culinary demonstration.

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