

# Recognize and Prevent Diabetes Mellitus with CERDIK at Mangunsari Health Center, Salatiga

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**Abstract:** Diabetes mellitus is a chronic condition in which the body cannot produce or use insulin effectively, causing high blood sugar levels. Non-pharmacological therapy is one option to prevent and treat diabetes mellitus, for example "Diabetes Diet." Diabetes diet can be done by regulating carbohydrate intake, increasing consumption of fruits and vegetables, avoiding foods high in sugar, and maintaining an active lifestyle. The purpose of this community service is to provide health promotion related to diabetes mellitus and diabetes diet so that the community understands how to treat and prevent diabetes. The method of implementing health promotion is carried out using two techniques: 1) Delivery of material, 2) Demonstration related to diabetes diet. The results of community service showed an increase in participant knowledge about diabetes mellitus and how to treat and prevent it. Participants showed high involvement and enthusiasm during the activity. Evaluation of community service was carried out through oral questions and pre-post tests related to the health promotion material provided. Health promotion related to diabetes mellitus is very important for the community so that they can gain positive knowledge to improve their health.

**Keywords:** Diabetes; Low sugar diet; Health

## Introduction

Diabetes Mellitus (DM) is a chronic metabolic disorder caused by the insulin hormone in the body that cannot be used effectively to regulate blood sugar balance, thereby increasing the concentration of sugar levels in the blood (hyperglycemia) (Zakiudin, A et al., 2023). Diabetes Mellitus is a state of chronic hyperglycemia accompanied by various metabolic disorders due to hormonal disorders that cause various chronic complications in the eyes, kidneys, nerves, and blood vessels (Indriyani, E et al. 2023). This disease often requires continuous monitoring and treatment because of its broad impact on the quality of life of sufferers.

The World Health Organization (WHO) says that diabetes mellitus (DM) is one of the leading causes of premature death and serious complications worldwide. An estimated 422 million adults are living with diabetes, and this number continues to increase, especially in low-

and middle-income countries. WHO also notes that many people with diabetes are unaware of their condition, with around 50% undiagnosed and untreated. In those who have been diagnosed, effective glycemic control is still low, leading to an increased risk of complications such as cardiovascular disease and kidney failure. WHO targets a 25% reduction in global diabetes prevalence by 2030 through prevention efforts, increased awareness, and better access to care (WHO, 2021).

Pharmacological and non-pharmacological therapies are options for treating Diabetes Mellitus. Non-pharmacological therapy involves a healthy diet and exercise to help prevent complications, and adjusted glycemic targets to maintain quality of life. Pharmacological therapy itself involves the use of drugs such as thiazolidinediones, sulfonylureas, DPP-4 inhibitors, SGLT2 inhibitors, and GLP-1 agonists, selected based on patient tolerance. This simplification

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aims to reduce the risk of hypoglycemia, while basal insulin is given with gradual adjustments prescribed by doctors in patients with Diabetes Mellitus (Putri et al., 2024).

Diet is one way to regulate eating patterns. The 3J diet (Amount, Type, Schedule) plays a role in controlling blood sugar levels in patients with type 2 diabetes. This diet follows three main principles: a consistent meal schedule, choosing foods based on the glycemic index, and determining the right amount of calories. The meal schedule consists of three main courses and two to three snacks at regular intervals. Choosing foods with the appropriate glycemic index can prevent blood sugar spikes, while regulating the amount of calories ensures that energy needs are met. The goal of this diet is to maintain blood glucose levels within the normal range (Sahwa et al., 2023).

Diabetes mellitus is a health problem that is quite common at the Mangunsari Health Center, this is because the community is still relatively unaware of how to...prevention and treatment methods to control blood sugar that is already within normal limits. Health promotion needs to be carried out to the community regarding the importance of preventing and controlling high sugar food consumption so that other complications do not occur due to Diabetes mellitus.

Efforts to control blood sugar levels and prevent complications in people with diabetes mellitus (DM) can be done through a balanced diabetes diet, namely a diet low in sugar and simple carbohydrates and rich in fiber and essential nutrients such as potassium, calcium, and magnesium. This diet aims to maintain stable blood glucose levels by reducing sugar intake and increasing consumption of vegetables, fruits, and whole grains (Yusuf et al., 2019). In addition, a healthy lifestyle such as not smoking and avoiding alcohol consumption is also important in managing diabetes and preventing serious complications (Suryani, 2021).

## Method

This health promotion was held on Tuesday, October 22, 2024, at 07.00-08.00 WIB at Duma Café, Jl. Aliwijaya 2 RT04/RW03, Pengilon. The participants of this health education were 19 people from Pengilon RT04/RW03. The material providers were nursing students of the Nursing Science Study Program, Faculty of Medicine and Health Sciences, Satya Wacana Christian University.

Three stages carried out in the counseling are preparation, implementation and evaluation. First, preparation which includes processing permits to the head of gymnastics RT04/RW03 Pengilon by the field instructor. After obtaining permission, the implementer makes preparations for health promotion. The

implementation begins by finding out health problems in the community by discussing with cadres and health center instructors. Second, the implementation of health promotion is divided into three sessions: (1) Implementation of diabetes gymnastics activities with the elderly; (2) providing material on "recognizing and preventing diabetes mellitus"; (3) Demonstration of a trial of diabetic purple sweet potato-jicama pudding for diabetes patients. The third stage, evaluation, is by providing ten pre-post test questions with true or false answers to see changes in community knowledge about the material "recognizing and preventing diabetes mellitus" that has been delivered and the success of the activity, as well as question and answer activities related to the material that has been delivered and giving prizes to participants who actively ask and answer questions during the question and answer session.



Figure 1. Implementation of Health Promotion

The demonstration was conducted by directly introducing the health promotion implementer to the participants a sample of purple sweet potato-jicama pudding creation that had been prepared in advance, as one of the good food products for a diabetic diet. The ingredients used were purple sweet potato, jicama, plain milk, plain nutrijell, stevia sweetener, salt to taste. After that, the sample was distributed to the participants along with the recipe or how to make it, so that the participants could make a creation of diabetic purple sweet potato-jicama pudding at home.

## Results and Discussion

Health promotion to the community in Dusun Pengilon Rt 04/Rw 03, Mangunsari. This health promotion consists of a series of implementation of demonstration nursing and filling out Pre and Post Tests. Diabetes mellitus is one of the diseases that are still widely suffered by the community in Pengilon, around 30% of the diseases suffered by the community. The number of participants is 19 people who have the

criteria of a history or are currently experiencing Diabetes mellitus.

**Table 1.** Frequency Distribution of Characteristics of Health Promotion Participants

Participant Characteristics	Frequency (n=5)	Percentage (%)
Gender		
Man	1	10%
Woman	18	90%
Age		
65-80 Years	19	100%

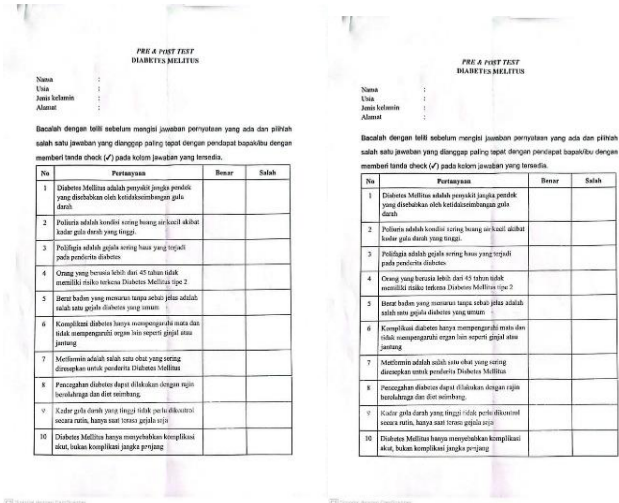
From the data in Table 1 shows that the majority of health promotion participants are women as much as 90%, the average age of the elderly who attended was 65-80 years as much as 100%. Nineteen residents of Pengilon Rt, 04 / Rw, 03 Mangunsari according to table 1 are Diabetes mellitus sufferers who were present when the health promotion and DM diet exercise were carried out.

Diabetes mellitus is still a disease that is widely suffered by the community due to lack of knowledge about foods to avoid and foods that are good to consume. In addition, many people consider diabetes as a common disease, so they do not control their diet. Knowledge about diabetes needs to be conveyed to the community to increase understanding, so that they do not consider diabetes as a trivial condition and are able to prevent and manage it through the right diet.

The results of the health promotion activity on "recognize and prevent diabetes mellitus" are that participants looked very enthusiastic in following the health promotion activity from beginning to end and were able to understand about diabetes mellitus and how to prevent it. This is evidenced by the ability of participants to answer each question correctly, which was given directly by the instructor during the evaluation session, and seen from the post-test results of health promotion participants who were able to fill in the answers correctly were more dominant during the pre-test.

The method of preventing diabetes mellitus taught in health promotion activities is diabetes prevention with the CERDIK method recommended by the Ministry of Health, namely regular health checks, eliminating cigarette smoke, diligent physical activity, a balanced diet, adequate rest, and stress management (Ministry of Health, 2016). The main focus in preventing diabetes mellitus carried out by the group is to carry out physical activity by doing diabetes mellitus gymnastics and teaching diabetes mellitus diet with the creation of diabetic purple sweet potato-jicama pudding.

1. Preparation Stage



**Figure 2.** Diabetes Mellitus Pre-Test & Post-Test Questionnaire

The community service group consists of lecturers and students. Furthermore, the group made a time contract to hold health promotion activities. The time contract stage went well assisted by the supervisor at the health center and the group had the opportunity on Tuesday at 07.00-09.00 WIB. The group also prepared a questionnaire for the health promotion participants.



**Figure 2.** Diabetes Mellitus Leaflet



Figure 3. Diabetes Mellitus Banner

The implementer made a diabetes mellitus diet leaflet and a banner about recognizing and preventing diabetes mellitus that would be used in the activity and to be distributed to health promotion participants. The banner attached information about the definition of diabetes mellitus, signs and symptoms, and how to prevent diabetes mellitus in a SMART way, and the leaflet attached information about the definition of diabetes mellitus diet, the purpose of diabetes mellitus diet, requirements for diabetes mellitus diet and choices

of diabetes mellitus-friendly foods, as well as the creation of a recipe for diabetic purple sweet potato-jicama pudding that is safe for diabetes mellitus sufferers. The banner about recognizing and preventing diabetes mellitus was placed in front of the participants so that participants could read information about diabetes mellitus during the activity, and the diabetes mellitus diet leaflet was distributed to participants in the health promotion activity to take home so that the information about diabetes mellitus diet and how to make diabetic purple sweet potato-jicama pudding that was given could be studied and remembered by the participants when they returned home.

2. Activity Implementation Stage

The implementer carried out health promotion about diabetes diet to Diabetes Mellitus sufferers in Dusun Pengilon RT04/RW03 Mangunsari at 07.00 - 08.00 WIB. This health promotion of diabetes mellitus diet was given to the community to improve and add to their knowledge and provide education related to how to manage diabetes effectively. The implementation of the activity began with an opening greeting, opening prayer, welcoming speech, and introduction of students. Health promotion began with the provision of material containing the definition of diabetes mellitus, signs and symptoms of diabetes mellitus, causes of diabetes mellitus, treatment and prevention of diabetes mellitus, and complications of diabetes mellitus.



Figure 4. Presentation of Diabetes Mellitus Diet Material

In addition to providing materials, the implementers also provided a demonstration related to "diabetic purple sweet potato-jicama pudding" which showed what foods can be avoided and which are good for consumption by diabetes mellitus sufferers.

Demonstration of creation of diabetic pudding from purple sweet potato and jicama was conducted to provide an example of a dessert that is safe for people with diabetes mellitus. In addition, the group also

introduced how to make diabetic pudding from purple sweet potato-jicama, such as steaming about 250 grams of purple sweet potato until soft, then let it cool down and peel the skin. Weigh 200 grams of sweet potato, then blend it with milk until smooth. Pour the mixture of milk and sweet potato into a pan, add jelly powder, stevia/tropicana slim, and a little salt, then cook while stirring. Taste and add stevia/tropicana if needed. Once hot enough, add chopped jicama, then continue stirring until it really boils, then turn off the heat and stir briefly to reduce steam. Pour the pudding into a cup and let it cool down. Serve cold and enjoy the soft texture of the sweet potato pudding with the crunchy sensation of jicama. Participants were very enthusiastic and active in the discussion during the presentation of the material and demonstration, as evidenced by the many questions from participants regarding good food for people with diabetes.



**Figure 5.** Demonstration of Diabetes Mellitus Diet Exercises and Distribution of Purple Sweet Potato Pudding

### 3. Evaluation Stage

Evaluation of the implementation of this health promotion activity, the implementer has created questions such as *pre-test* and *post-test* filled by participants who attended the activity. Where the *pre-test* and *post-test* contain the same questions and will be distributed at the beginning and end of the activity. The contents of the *pre-test* and *post-test* are around the participants' knowledge about diabetes mellitus.

**Table 2.** Pre and Post Test Results for Diabetes Mellitus

Initials	Pre-test score	Post-test scores
Mrs. S	60	100
Mrs. H	70	100
Mrs. S	90	100
Mrs. P	60	100
Mrs. H	60	100
Mrs. P	60	100
Mrs. W	70	100
Mrs. S	60	100
Mrs. K	80	100
Mrs. A	90	100
Mrs. E	90	100
Mrs. I	80	100
Mrs. M	70	100
Mrs. S	90	100
Mrs. A	90	100
Mrs. S	70	100
Mrs. S	90	100
Mrs. B	80	100
Mrs. L	60	100

Based on table 2, it shows that there is an increase in public knowledge related to diabetes mellitus. Proven by the *post-test* work score getting 100 or all correct. Indicators of the success of health promotion can be clearly measured through the final score results of the *pre-test* and *post-test*. The community in Dusun Pengilon Rt 04 / Rw 03, Mangunsari also expressed satisfaction with the activities and hoped that the increase in diabetes mellitus in their environment could help reduce the incidence of diabetes mellitus.



**Figure 7.** Group Photo

### Conclusion

Health promotion held in Dusun Pengilon Rt 04/Rw 03, Mangunsari, Salatiga, showed an increase in public knowledge about diabetes mellitus diet in an

effort to control and prevent diabetes complications. This activity has a positive impact on changes in motivation to live a healthy lifestyle. The increase in participants' understanding is reflected in the results of the pre-test and post-test scores which have increased. Health workers need to continue to increase public awareness and motivation to consume healthy foods to prevent and manage diabetes, so that they can avoid serious complications. This health promotion about diabetes diet is considered successful because participants showed high enthusiasm and gave positive responses in the evaluation of the activity.

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