

## Education on Fulfilling Nutritional Needs in Diabetes and Tuberculosis Patients

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### ABSTRACT

Prevalence of diabetes mellitus and tuberculosis still quite high in Indonesia. This disease is closely related to nutritional status. Inadequate understanding for patients and families can increase the risk of complications and the instability of the patient's condition. The purpose of the activity is to increase patient and family understanding when it comes to treating and preventing DM and TB. The community service method is in the form of a seminar with an unfamiliar title so you don't understand DM and TB, with the opening stages, material presentation and closing. The results of the activity lasted 3 hours with a total of 30 participants, and presentations from 3 speakers on the topic of getting to know DM & TB, meeting the nutritional needs of DM patients and fulfilling the nutrition of TB patients. The activity went very well, and the evaluation was calculated at the end. Through this activity, participants gain an understanding of 3 ways to fulfill the nutritional needs of DM and TB patients by paying attention to the amount of food, type and pattern of eating to maintain blood sugar stability and TB treatment efforts.

**Keywords:** Diabetes mellitus, nutritional fulfillment, tuberculosis

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### INTRODUCTION

Diabetes mellitus and tuberculosis (TB) are the two disease groups with the highest prevalence in Indonesia. Diabetes mellitus is a disease that is familiar in society. According to WHO in 2016, diabetes mellitus is a chronic metabolic disorder with multiple etiologies characterized by high blood sugar levels accompanied by disturbances in carbohydrate, lipid and protein metabolism as a result of insufficient insulin function. Diabetes mellitus is a non-communicable disease, caused by metabolic disorders. This metabolic disorder is caused by decreased insulin production in the body so that the body is unable to convert glucose (blood sugar) into glycogen; then when insulin production decreases, the body will be at risk of experiencing hyperglycemia.

Diabetes mellitus has become a common disease that occurs around the community. Indonesia ranks seventh in the top seven cases of diabetes mellitus in adults aged 20-79 years at the global level, after China, India, the United States, Pakistan, Brazil and Mexico. The number of people with diabetes mellitus in Indonesia has reached 10.7 million people (International Diabetes Federation, 2019). The 2018 Basic Health Research (Riskesdas) states that diabetes mellitus in

Indonesia is 1.8% more common in women than 1.2% in men and is in the age range of 55-64 years. This is evidenced from Basic Health Research (Riskesdas) data which shows that there is an increase in the prevalence rate of Diabetes Mellitus, from 6.9% in 2013 to 8.5% in 2018. Based on blood sugar checks in residents aged > 15 years in urban areas, it is 5.7% then the prevalence of IGT (Impaired Glucose Tolerance) in residents aged > 15 years in urban areas is 10.2%, the prevalence of eating less fruits and vegetables is 93.6% and the prevalence of drinking alcohol in the past month is 4.6%.

Apart from Diabetes Mellitus, Tuberculosis (TBC) is also a common disease in society. TB is an infectious disease caused by the bacterium *Mycobacterium tuberculosis* which can attack all parts of the body. TB that attacks the lungs is more common in Indonesian society. When the lungs are infected with germs, they will be damaged so they cannot breathe properly. (Sari and Rachmawati, 2019) According to data from WHO, TB disease is one of the biggest causes of death in the world. In 2015, as many as 1.57 million died from TB disease (WHO, 2021). In Indonesia, according to the Ministry of Health (2016) TB sufferers were found in 2015 as many as 330,910 cases. This number increased by 1.96 percent from the previous year, which was 324,539 cases. In addition, WHO (2016) states that Indonesia ranks second with the highest number of TB cases in the world.

The high data on the prevalence of diabetes mellitus and TB cases in Indonesia, this disease should be addressed immediately, considering the cause of death from this disease is very high. Therefore the pattern of fulfillment of nutrition really needs attention. The government and the community need to make efforts to regulate a healthy lifestyle by regulating the types of food consumed, maintaining stable blood sugar levels, and eating a diet low in fat, salt and sugar. Responding to the problems regarding the risks of these two diseases, prevention efforts are needed in the community environment and treatment for patients diagnosed with DM and TB. Efforts made as a form of support to reduce the incidence of diabetes mellitus and tuberculosis in the community, Ukrida's nursing study program carries out one of our roles, namely as an educator to prevent an increase in the prevalence of diabetes mellitus and tuberculosis by conducting outreach to the community. Nurses act as caregivers, one of their roles is as educators. Educator is the role of the nurse to provide information, knowledge and training to patients, families and community members in preventive, curative, promotive and rehabilitative efforts. The formulation of the problems found is whether the community already knows about diabetes mellitus and tuberculosis and their complications? How do you maintain a healthy diet and choose the right types of food to prevent and treat diabetes mellitus and tuberculosis?

## **METHOD**

The implementation method is in the form of health education about diabetes mellitus and tuberculosis. This activity aims to increase understanding of the importance of maintaining a healthy diet and maintaining a balance of glucose levels in the blood, to prevent DM cases and to maintain the cleanliness of the surrounding environment to avoid TB disease. Activities are carried out during the day using the zoom meeting platform; this was done due to the covid 19 pandemic situation and participants coming from various regions. The activity will be held on July 23, 2022 at 10.00 – 13.00 WIB. The target community activities are at risk of DM and TB or accompanying patients/families aged 20-70 years, with male or female gender. This education is open to the general public, especially for people who have a history of DM or TB. The stages carried out in this community service activity can be seen in Figure 1.

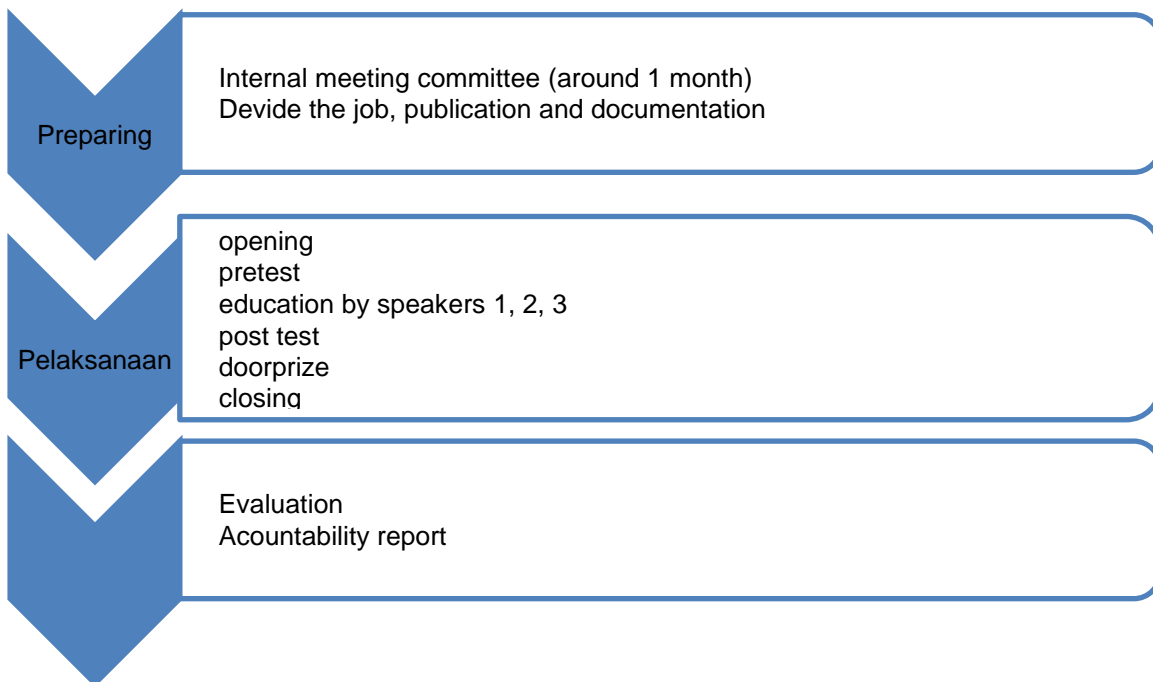


Figure 1 Flowchart of PKM Education Fulfillment of Nutrition activities in DM and TBC

## RESULT

Educational activity to meet the needs entitled

"You don't know, so you don't understand: Nutrition in DM and TB patients". This title was determined based on a common phenomenon in society, lack of familiarity with two types of diseases which are unknowingly influenced by healthy behavior/lifestyle. The activity was attended by 34 participants from various regions, the participants were enthusiastic and took part in a series of pre and posttest activities, the third session of resource persons and giving door prizes and oral evaluation at the end of the event.



Figure 2. Community Service Activity Poster

The activity, which was carried out under "Don't know, then don't understand: Nutrition in DM and TB Patients" emphasizes the nutritional needs of these two diseases. The activity was carried out with the presentation of resource person 1, who explained the general concept of disease regarding DM and TB. An initial explanation regarding definitions, signs, symptoms, complications and prevention efforts will help people recognize symptoms so that they can anticipate risks or complications. Providing information in the form of patient knowledge about diabetes mellitus will help manage diabetes, improve health and prevent complications (Nazriati, Pratiwi, & Restuastuti, 2018; Pangestuti, 2018).

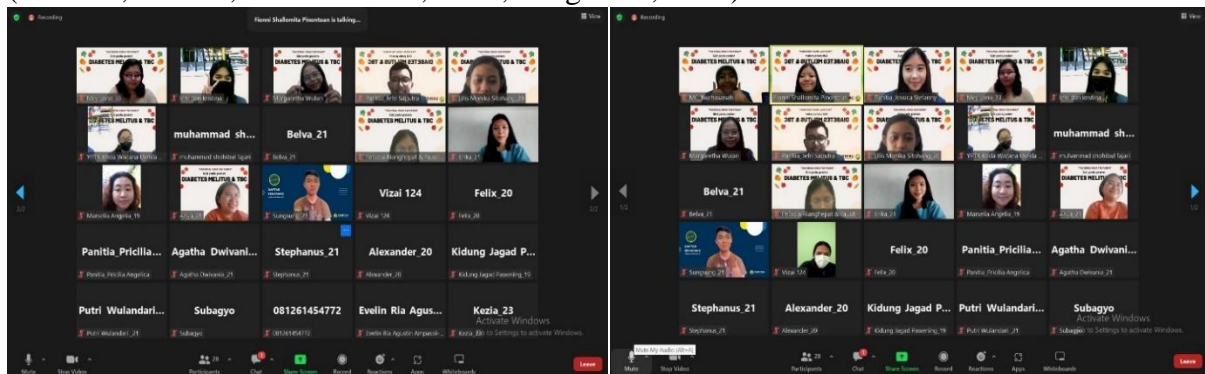


Figure 3. Documentation of Via Zoom Activities

The second exposure is related to nutritional needs in DM. One way to manage diabetes mellitus is through a balanced diet. Providing food according to the patient's condition and supporting disease recovery is the goal of the hospital to provide food.

The principle of managing meals for people with DM is almost the same as food recommendations for the general public, namely food that is balanced and according to individual calorie and nutrient needs. People with diabetes mellitus need to emphasize the importance of eating regularly in terms of meal schedules, type and amount of food, especially for those who use blood glucose-lowering drugs or insulin. Trying to provide a diet can meet the needs of patients, so that the implementation of the diabetes mellitus diet should follow the 3J guidelines (amount, schedule, and type).

According to Kosegeran, et al in 2017 giving patient knowledge about DM is a tool that can help sufferers carry out DM management throughout their lives so that the better the patient understands about their disease, the better they understand how to behave in handling their disease. Research at the Sibela Health Center in Surakarta City shows that knowledge and adherence to DM diets in diabetes mellitus patients are still very diverse, patients have incomplete knowledge about diabetes mellitus, patients are familiar with signs and symptoms, causes, management, and complications but do not know the amount of diet and not make a diet plan. According to WHO (2022) preventing diabetes and complications in the form of kidney failure can be overcome through providing understanding to patients and families, DM patients should have a regular eating schedule, regular exercise, medication and regular blood sugar checks.

Body Mass (BMI) is a simple nutritional status index that is related to underweight and overweight. The greater the BMI value, generally the higher the level of overweight. According to Nuryani and Sandaluyuk's research (2020). Efforts to manage blood sugar levels in patients with diabetes mellitus are to regulate a regular diet and intake of balanced and nutritious food. Food intake consumed daily is a relatively large component of nutrients included in the macronutrient group, namely carbohydrates, proteins and fats. Good nutritional management can begin with providing education to patients to improve and maintain nutritional status at optimal levels.

**DISCUSSION**

One of the factors that causes TB is poor nutritional status. When a person's nutritional status, the body's defense against infection will also be weakened. In a study conducted by Endah P (2012), Jefille suggested that the factors that influence nutritional status are the state of infection, food consumption, and food production. Low nutritional status will make it easier for the bacteria that causes TB to land on the human body. In accordance with the opinion of Minardiary and Toyalis, malnutrition can increase the morbidity or incidence of TB.

In tuberculosis, energy requirements and methods of administration must be carried out carefully to avoid under or overfeeding. The principle of the diet in TB disease is the HCHP (High Calorie High Protein) diet, enough fat, vitamins and minerals so that the patient's food needs are sufficient. In addition, TB disease also requires diet therapy which aims to provide enough food to repair and prevent further damage to body tissues. The diet therapy given is energy according to the patient's condition to achieve normal body weight, high protein to replace damaged cells, enough fat 15-25% of total energy needs, and enough carbohydrates left over from total energy needs.

Based on the results of research conducted by Yuniar and Lestari (2017) at the Sempor 1 Health Center, Kab. Kebumen, it was found that 70% of respondents with tuberculosis had low nutritional status. This happens due to several factors, one of which is their lack of knowledge about the need for good and nutritious food intake. There are still many people who experience low nutritional status, which is also in line with Elsa et al's research conducted at the Pulmonary Clinic of Arifin Achmad Hospital Pekanbaru, which describes the nutritional status of tuberculosis patients based on BMI (Body Mass Index) and the risk of malnutrition as follows: 31 people (100%) have a high risk of malnutrition. From the results of this study it was found that the need for good nutrition will reduce the severity and prevention of TB disease.

**CONCLUSION**

Diabetes mellitus and tuberculosis are closely related to meeting nutritional needs. The need for good and sufficient nutrition in DM and TB patients; will control optimal health and prevent the severity of these two diseases. Efforts from various parties are needed in controlling and preventing DM and TB. Through health education activities that have been carried out, it is hoped that patients and families can optimize the fulfillment of nutritional needs by paying attention to 3 important patterns, namely the amount of food, type of food and diet. If you pay attention to these three patterns, the condition of DM and TB patients will be more stable, as well as the family/society need to apply the pattern of nutritional needs appropriately.

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