

## DESCRIPTION OF VILLAGE COMMUNITY KNOWLEDGE ABOUT DIABETES MILITUS

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### ABSTRAK

Diabetes mellitus (DM), accounts for 60% of all deaths in all age groups worldwide. Because DM complications can cause blindness, kidney failure, diabetic foot (gangrene) which requires amputation, heart disease, and stroke. risk factors, symptoms, and management of this condition. The purpose of this research is to describe the Village Community's Knowledge about Diabetes Militus. Research Methods using descriptive method. The research sample consisted of 90 respondents who were randomly selected from village communities in the study area. Data collection was carried out through a questionnaire containing questions related to knowledge about diabetes mellitus, risk factors for symptoms and management related to diabetes mellitus. The results showed that most of the respondents had low knowledge about diabetes mellitus, namely 41 respondents (45.6%). Only 10 respondents (11.1%) knew about diabetes mellitus, risk factors for symptoms and management related to diabetes mellitus. Conclusion: Village community knowledge about diabetes mellitus is still low. Therefore, education efforts and more effective health campaigns are needed to increase village community knowledge about diabetes mellitus, including risk factors, symptoms, and management. This is expected to encourage rural communities to be more aware of the importance of health and prevent diabetes mellitus and the complications that can arise.

Keywords: diabetes mellitus; knowledge; rural community

### INTRODUCTION

Data from WHO states that around 150 million people in the world have diabetes mellitus (DM) (Saputri, Setiani, & Dewanti, 2018). Every year people with diabetes mellitus are increasing, most of them come from developing countries. There are 29.1 million Americans with diabetes, of which 21 million are diagnosed with diabetes, while 8.1 million are undiagnosed diabetes (Andreas Pradipta et al., 2020). Diabetes mellitus is a non-communicable disease and really needs serious attention where insulin cannot be produced optimally by the pancreas (Safitri & Nurhayati, 2019). Insulin that does not work adequately will make glucose levels in the blood high. Insulin is a hormone that regulates glucose so that glucose levels in the blood will become abnormal. During normal fasting, blood glucose levels are 70-110 mg/dL (Fatimah, 2015).

According to Kristianita, Yunus and Gayatri, (2018) Approximately 1.3 million people die before the age of 70 due to diabetes mellitus. When compared between residents who live in cities and rural areas, the age of the majority who died was the majority aged 45-54 years. The IDF predicts DM will be the seventh in the world's deaths by 2030 In Indonesia the prevalence of DM is around 4.8% and more than half of DM cases (58.8%) (Lathifah, 2017). DM is not diagnosed. It is estimated that as many as 21.3 million people in Indonesia will have diabetes in 2030 (Prabowo & Hastuti, 2015). Diabetes is still a serious health problem in Indonesia, and the number of sufferers continues to increase every year. (Aryastami & Tarigan, 2017). Diabetes Mellitus is

caused by a lack of the insulin hormone produced by the pancreas to neutralize blood sugar in the body. Diabetes mellitus can be caused by several factors including: heredity, obesity (overweight), eating instant food, hormonal disorders, hypertension (high blood pressure), high triglycerides, smoking, stress, consuming too many carbohydrates, damaging pancreatic cells, high cholesterol levels, hormones. Insulin hormone abnormalities are useful for processing sugar or glucose from the food and drinks you consume. If the pancreas is normal or insulin production is sufficient, then blood sugar will be processed properly, meaning that the person concerned has damaged the work of the pancreas which is not perfect. As a result, the pancreas does not produce enough insulin to neutralize blood sugar (Andreas Pradipta et al., 2020)

Classification of DM according to the International Diabetes Federation (IDF) in 2017: 1) Type-1 diabetes. Type 1 diabetes is caused by an autoimmune reaction in which the body's immune system attacks the insulin-producing beta cells in the pancreas. As a result, the body does not produce insulin or lacks the insulin it needs. Genetic susceptibility, viral infection, toxins or some dietary factors can be precipitating factors of type 1. Type 1 most often occurs in children and adolescents. Type 1 DM sufferers will not be able to survive without insulin injections. Regular monitoring is needed, maintaining a healthy diet and healthy lifestyle if someone uses insulin injections. 2) Type-2 diabetes. This type of DM is the most common diabetes found, accounting for about 90% of all diabetes cases. In type-2 diabetes, hyperglycemia is the result of inadequate insulin production and the body's inability to respond to insulin, which is defined as insulin resistance. Although type 2 diabetes is most common in adults, adolescents and children can also get it due to increasing rates of obesity, ineffective physical activity and poor diet. 3) Gestational Diabetes Mellitus (GDM), Increased blood glucose levels (hyperglycemia) during pregnancy.

GDM can be diagnosed in the first trimester of pregnancy but in most cases diabetes may be present before pregnancy but not diagnosed. 4) Impaired glucose tolerance and impaired fasting glucose (IGT). IGT is also called intermediate hyperglycemia or prediabetes. Increased blood glucose levels above normal limits and below the diagnostic threshold for diabetes. Criteria for impaired glucose tolerance (IGT) and impaired fasting glucose (IFG). glucose levels were higher than normal, but not high enough to make a diagnosis of diabetes, namely between 7.8-11.0 mmol/L (140-199 mg/dl) two hours after the Oral Glucose Tolerance Test (OGTT). IFG is a condition when fasting glucose levels are higher than usual, which is between 6.1-6.9 mmol/L (110-125 mg/dl). People with prediabetes are at high risk of developing type 2 diabetes. DM risk factors according to the World Health Organization in 2016 are as follows: 1) Family history of diabetes or genetics. 2) Older age, 3) Obesity or excessive weight gain during pregnancy. 4) Poor diet and nutrition, 5) Lack of physical activity, 6) History of gestational diabetes, 7) Smoking, infection and environmental influences, 8) Other factors include inadequate fruit and vegetable intake, dietary fiber and food intake which is high in saturated fat.

The clinical signs and symptoms of DM according to (International Diabetes Federation, 2017) are as follows: 1. Type-1 diabetes, always feeling thirsty and dry mouth (polydipsia), frequent urination (polyuria), lack of energy, fatigue, always feeling hungry (polyphagia), weight loss, decreased vision. 2. Type 2 diabetes, always feeling thirsty (polydipsia), frequent urination (polyuria), fatigue, slow healing of wounds and frequent infections, frequent tingling or numbness in hands and feet, blurred vision. it may be the same as type 1 diabetes but is often less well known or may have no early symptoms and the disease is diagnosed years after its onset or when

complications are already present. 3. Gestational Diabetes Mellitus (GDM). Symptoms of excessive hyperglycemia during pregnancy are rare and may be difficult to detect. For this reason, it is necessary to perform an oral glucose tolerance test (OGTT) between the 24th and 28th week of pregnancy, but for women at high risk it can be screened earlier. According to PERKENI (2015) In general, DM complaints can be categorized as follows: 1) Classic DM complaints: polyuria, polydipsia, polyphagia and unexplained weight loss. 2) Other complaints: weakness, tingling, itching, blurry eyes, and erectile dysfunction in men, and pruritus of the vulva in women.

DM complications according to the International Diabetes Federation (2017): 1) Diabetic Eye Disease (DED). DED consists of diabetic retinopathy (DR), diabetic macular edema (DME), cataracts, glaucoma, loss of eye focus or double vision. DED occurs directly as a result of chronically high blood glucose levels causing retinal capillary damage, leading to capillary leakage and occlusion. Ultimately causing loss of vision to blindness. 2) Chronic Kidney Disease (CKD), One of the causes of kidney failure is diabetes, but the frequency varies between populations and is also related to the severity and duration of the disease. CKD can also be caused by diabetic nephropathy, dysfunctional polyneuropathy of the bladder, increased incidence of bladder infections or macrovascular angiopathy. 3) Heart disease. Smoking, high blood pressure, high cholesterol levels and obesity are risk factors for heart disease in people with DM. Complications that can occur include angina, coronary artery diseases (CADs), myocardial infarction, stroke, peripheral arterial disease (PAD), heart failure. 4) Diabetic neuropathy. The most common complication in DM sufferers is diabetic neuropathy. The main risk factor for Neuropathy is the degree and duration of elevated blood glucose. Loss of autonomic, motor and sensory functions in the body as a result of this neuropathy.

Table.1  
 Diabetes mellitus diagnostic criteria

| Diabetes can be diagnosed if one or more of the following criteria:  | Impaired Glucose Tolerance (IGT) can be diagnosed if the following two criteria fulfilled  | Impaired Fasting Glucose (IFG) can be diagnosed if both of the following criteria are met fulfilled                  |
|--|--|--|
| Fasting plasma glucose $\geq 7$ mmol/L (126 mg/dl)   | Fasting plasma glucose $< 7$ mmol/L (126 mg/dl)  | Fasting plasma glucose 6.1-6.9 mmol/L (110-125 mg/dl)  |
| Plasma glucose 2 hours $\geq 11.1$ mmol/L (200 mg/dl) after an Oral Glucose Tolerance Test (OGTT) with a 75 g glucose load | Two-hour plasma glucose $\geq 7.8$ $< 11.1$ mmol/L ( $\geq 140$ to $< 200$ mg/dl) after Test Oral Glucose Tolerance (OGTT) with a glucose load 75 gr | Two-hour plasma glucose $< 7.8$ mmol/L (140 mg/dl) after a weighted Oral Glucose Tolerance Test (OGTT) glucose 75 gr |
| Random glucose $\geq 11.1$ mmol/L (200 mg/dl) or HbA1c $\geq 48$ mmol/mol (equivalent to 6.5%)                             |  |  |

Source: (International Diabetes Federation, 2017)

Diabetic neuropathy can also cause ulcers due to external trauma or internal pressure on the bones, can occur due to abnormal feeling and progressive numbness of the feet. Erectile dysfunction, digestive and urinary tract problems, and cardiac autonomic dysfunction can also be caused by Neuropathy. 5) Oral Health, Diabetics have an increased risk of gingivitis (periodontitis) or gingival hyperplasia if blood glucose is not managed properly. Other diabetes-related oral

conditions include tooth decay, candidiasis, neurosensory disturbances (burning mouth syndrome), salivary dysfunction. According to PERKENI, (2015) The diagnosis of DM is based on examination of blood glucose levels. The recommended blood glucose examination is an enzymatic glucose examination with venous blood plasma material. Meanwhile, monitoring of treatment results can be done using capillary blood glucose examination with a glucometer and the diagnosis cannot be established on the basis of the presence of glucosuria. Diagnostic criteria for diabetes according to the World Health Organization (WHO) can be enforced by observing an increase in blood glucose levels.

In general, the goal of managing diabetes according to PERKENI, (2015) is to improve the quality of life of people with diabetes. Management goals include: 1) Short term goals: eliminate DM complaints, improve quality of life, and reduce the risk of acute complications. 2) Long-term goals: prevent and inhibit the progression of microangiopathy and macroangiopathy complications. 3) The ultimate goal of management is to reduce DM morbidity and mortality. To achieve this goal, it is necessary to control blood glucose, blood pressure, weight, and lipid profile, through comprehensive patient management. There are four pillars of management in diabetics, namely education, medical nutrition therapy, physical exercise, and pharmacological therapy. (PERKENI, 2015),

- a) Education. Educational materials at the initial level are carried out in Primary Health Services which include: material about the course of DM disease, DM complications and their risks, interactions between food intake, activity, etc. Educational materials at the advanced level are carried out in Secondary or Tertiary Health Services which include: management of DM while suffering from other illnesses, maintenance or care of feet, etc.
- b) Medical Nutrition Therapy (TNM). Overall involvement of team members (doctors, nutritionists, other health workers as well as patients and their families) is the key to the success of TNM.

The principle of managing food for people with DM is food that is balanced and according to the calorie and nutrient needs of each individual. DM sufferers need to be given emphasis on the importance of regular eating schedules, types and amounts of calorie content, especially in those who use drugs that increase insulin secretion or insulin therapy itself. According to the Accepted Daily Intake/ADI, the recommended food composition is: carbohydrates for 45-65% of total energy intake, especially carbohydrates that are high in fiber, fat intake is recommended for around 20-25% of calorie needs, protein for 10-20% of total energy intake, sodium for people with DM are the same as healthy people, namely <2300 mg per day, fiber from nuts is also recommended for people with DM, fruits and vegetables as well as sources of carbohydrates that are high in fiber, sweeteners are safe to use as long as they do not exceed safe limits. c. Physical exercise, physical exercise and daily physical activities are carried out regularly 3-5 times per week for 30-45 minutes, for a total of 150 minutes per week. It is advisable to do a blood glucose check before physical exercise. If the blood glucose level is <100 mg/dl the client must consume carbohydrates first and if > 250 mg/dl it is recommended to postpone physical exercise.

The recommended physical exercise is in the form of aerobic exercise with moderate intensity (50-70% of maximum heart rate) such as brisk walking, leisurely cycling, jogging and swimming. Maximum heart rate is calculated by subtracting 220 from the patient's age. Physical exercise should be adjusted according to age and physical fitness status. d. Pharmacological therapy,

pharmacological therapy is given together with dietary and physical exercise (healthy lifestyle). Pharmacological therapy consists of oral medication and injectable forms. Oral antihyperglycemic drugs are divided into 5 groups: insulin secretion enhancers (insulin secretagogues; such as sulfonylureas and glinids), insulin sensitivity enhancers; such as metformin and thiazolidinediones (TZD), inhibitors of glucose absorption in the digestive tract; such as alpha glucosidase inhibitors, DPP-IV (Dipeptidyl Peptidase-IV) inhibitors; such as sitagliptin and linagliptin, SGLT-2 (Sodium Glucose Co-transporte 2) inhibitors; such as canagliflozin and empagliflozin.

## METHOD

The research method used is quantitative descriptive which aims to describe the knowledge of rural communities about DM knowledge in people who come to the elderly Posyandu in the Central Java region. The sample used was 90 respondents. Statistical analysis used is the proportion with the appearance in the form of tables and frequency distribution.

## RESULTS AND DISCUSSION

Table 1.  
 Frequency distribution based on Respondent's Gender (n=90)

| Gender | f  | %    |
|--------|----|------|
| Man    | 26 | 28.9 |
| Woman  | 64 | 71.1 |

Source: 2022 Research Results

Table 1 above it can be concluded that the majority of respondents were women as many as 64 respondents (71.1,%) and men as many as 26 respondents (28.9%).

Table 2  
 Frequency distribution based on Respondents' Age (n=90)

| Gender     | f  | %    |
|------------|----|------|
| middle age | 49 | 54.4 |
| elderly    | 30 | 33.3 |

Table 2 above it can be concluded that the frequency distribution based on the age of the majority of respondents is middle age 49 respondents (54.4%), elderly as many as 30 respondents (33.3%) of 90 respondents

Table 3  
 Frequency distribution based on Respondents' Blood Sugar

| Blood Sugar  | f  | %    |
|--------------|----|------|
| Hypoglycemia | 3  | 3.3  |
| Normal       | 64 | 71.1 |
| Diabetes     | 23 | 25.6 |

Table 3 above it can be concluded that the distribution of blood sugar for the majority of respondents was normal 64 respondents (71.1%), suffered from diabetes mellitus as many as 23 respondents (25.5%), hypoglycemia as many as 3 respondents (3.3%)

Table 4.  
 Frequency Distribution Based on Respondents' Education

| Pengetahuan        | f  | %    |
|--------------------|----|------|
| Elementary School  | 21 | 23.3 |
| Junior High School | 32 | 35.6 |
| Senior High School | 31 | 34.4 |
| College            | 6  | 6.7  |

Table 4 above, it can be said that the education of the majority of respondents was junior high school as many as 32 respondents (35.6%), high school education 31 respondents (34.4%), elementary education 21 respondents (23.3%), and the minority were university educated (PT) as many as 6 respondents (6.7%).

Table 5.  
 Frequency Distribution Based on Respondents' Knowledge of DM (n=90)

| Knowledge  | f  | %    |
|------------|----|------|
| Good       | 10 | 11.1 |
| Enough     | 39 | 43.3 |
| Not enough | 41 | 45.6 |

Table 5 of the distribution above, it can be concluded that the majority of respondents' knowledge about diabetes mellitus were respondents with less knowledge, 41 respondents (45.6%), enough 39 respondents (43.3%), good, 10 respondents (11.1%)

This research was conducted in three districts in Central Java in a village far from urban areas (inland). The results showed that the majority of respondents were female, namely 64 respondents (71.1%). The results of this study were in line with the results of a survey conducted by the 2014 Ministry of Health. In the 2013 Riskesdas, the prevalence in women to men was 1.7% against 1.4%. Whereas in the 2018 Riskesdas the prevalence of diabetes mellitus in women was higher than men with a ratio of 1.78% to 1.21%. Based on table 2, it shows that the frequency distribution of respondents based on the age of the majority of respondents is middle age, 49 respondents (54.4%). The majority of diabetics are aged 55-64 years. Basic Health Research in 2013 and 2018 states that the higher a person's age, the greater the risk of developing diabetes mellitus. Research conducted by Valenti, Bayram, & Miller, (2013) which was conducted in Australia using a sample of 464 respondents, examined patients with type 2 diabetes mellitus, found that the average age of type 2 diabetes mellitus patients was 18 years and over and the highest score at the age of 65 years and over. Things that are not much different were found in a study conducted by Farmer et al., (2012) which stated that the average age of type 2 diabetes mellitus patients was 60.1 years. Meanwhile, according to the International Diabetes Federation (IDF) in 2015 reported that at the age of adulthood, currently around 415 million people suffer from type 2 diabetes suffered by people in adulthood.

Based on table 3 shows that the frequency distribution based on blood sugar of the majority of respondents is normal 64 respondents (71.1%), respondents who suffer from diabetes mellitus are 23 respondents (25.5%), respondents who experience hypoglycemia are 3 respondents (3.3%), the results of this study are 26 respondents whose blood sugar was not normal, where 3 respondents experienced blood sugar below normal. Low blood sugar (hypoglycemia) if it is not handled properly can cause disturbances in the function of the brain's nerves, which if it continues can cause

illness or death. in line with research conducted by Ahmad J, (2019), stating that the incidence of hypoglycemia is quite high, approximately 90%. Factors that cause a person to experience hypoglycemia in people who have diabetes are gender, occupation, knowledge, education and age. So that hypoglycemia does not get worse, it can be prevented by increasing the ability of people with diabetes mellitus to know the signs and symptoms of hypoglycemia, controlling blood sugar levels and proper management, by carrying out the four pillars of controlling diabetes mellitus, namely education, eating arrangements, exercise/exercise and drug.

Based on table 4 above, only 6 respondents (6.7%) had high school education, and the majority were junior high school educated as many as 32 respondents (35.6%). A person's education would correlate with one's knowledge. According to Fuad, (2005) in Fachrudin Imron (2017), states that education is a dominant factor in the formation of quality human resources and is a basic need in life. Education is very important in overcoming and following the challenges of the times and can have a positive influence on various aspects of life so it is not surprising that education always gets a lot of attention. The results of the research are also in line with research conducted by Damayanti Mesi, (2021) research shows that there is a relationship between the level of education to the level of knowledge with a sig value of 0.000 ( $<0.05$ ) where the higher the level of education, the higher the level of knowledge possessed. According to the research results from table 5 above, the majority of respondents were less knowledgeable, 41 respondents (45.6%) of the 90 respondents. The low level of public knowledge, if seen from the results of this study, is not only due to low education, it is possible because the age of the majority of respondents is junior high school as many as 32 respondents (35.6%).

The results of this study are in accordance with the theory put forward by Notoatmojo, (2014) which states that the biggest factor of knowledge is influenced by education because with higher education a person will respond more rationally to the information received and will think about the extent to which one's advantage is given to the development of others. in achieving certain goals. This research is also in line with research conducted by Wulandari, et al (2016) concerning the relationship between education level and patient knowledge about generic drugs and patents which states that there is a relationship between education level and patient knowledge about generic and patent drugs with a p value of 0.000. The lack of public knowledge about diabetes mellitus can also be due to the fact that information about diabetes mellitus has not reached residents properly, or because the community is not concerned about their health, especially diabetes mellitus.

## **CONCLUSION**

Village community knowledge about diabetes mellitus is still low. Therefore, education efforts and more effective health campaigns are needed to increase village community knowledge about diabetes mellitus, including risk factors, symptoms, and management of this condition. This is expected to encourage rural communities to be more aware of the importance of health and prevent diabetes mellitus and the complications that can arise. So that rural communities can avoid the malignancy of diseases caused by complications of diabetes mellitus.

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